DÜRKOPP ADLER

M-TYPE Made by DÜRKOPP ADLER

867

Operating Manual

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Contents

1 About this manual 5
1.1 Scope of application of the manual 5
1.2 Applicable documentation 5
1.3 Damage during transport 5
1.4 Limitation of liability 5
1.5 Symbols used 6
1.6 Figures 6

2 Safety instructions 7
2.1 General safety instructions 7
2.2 Signal words and symbols used in safety instructions 9

3 Performance description 11
3.1 Features 11
3.2 Declaration of conformity 12
3.3 Intended use 12
3.4 Technical data 12
3.4.1 Noise emission 12
3.4.2 Data overview by submodel 13
3.4.3 Additional equipment and manuals 19

4 Device description 21

5 Operating instructions 23
5.1 Switching the power supply on and off 23
5.2 Inserting and replacing the needle 24
5.2.1 Needle change on 1-needle machines 25
5.2.2 Needle change on 2-needle machines 26
5.2.3 Changing needles on switchable needle bars 27
5.3 Threading in the needle thread 28
5.3.1 Needle thread threading on 1-needle machines 29
5.3.2 Needle thread threading on 2-needle machines 31
5.3.3 Needle thread threading on machines with a clean seam start 32
5.4 Inserting and winding on the hook thread 33
5.5 Replacing the hook thread bobbin 36
5.6 Thread tension 37
5.6.1 Adjusting the needle thread tension 38
5.6.2 Removing blocking of the needle thread tension 41
5.6.3 Opening the needle thread tensioner 41
5.6.4 Adjusting the hook thread tension 42
5.7 Setting the thread regulator 43
5.8 Venting the sewing foot 44
5.8.1 Mechanical lifting with the knee lever 44
5.8.2 Electro-pneumatic lifting with a foot pedal 44
5.9 Locking the sewing feet in the upper position 45
5.10 Setting the sewing foot pressure 46

5.10.1 Removing blocking of the adjusting wheel 47
5.11 Setting the sewing foot stroke 48
5.11.1 Limiting of number of stitches with an increased sewing foot stroke 48
5.11.2 Setting the stroke height 49
5.11.3 Quick stroke adjustment via knee switch 50
5.11.4 Removing blocking of the sewing foot pressure adjustment wheel 51
5.12 Stitch length 52
5.12.1 Adjusting the stitch length 52
5.12.2 Sewing with 2 stitch lengths 53
5.12.3 Removing blocking of the adjusting wheel 54
5.12.4 Sewing backwards 55
5.13 Quick functions on the keypad 56
5.13.1 Activating function keys 56
5.13.2 Transferring a key function to the additional switch 58
5.14 Switching the binder 59
5.15 Switching switchable needle bars 60
5.16 Operating the controller 61
5.17 Sewing 62

6 Maintenance 65
6.1 Cleaning work 65
6.1.1 Cleaning the machine 65
6.1.2 Cleaning the motor fan sieve 67
6.2 Checking the oil level 68
6.3 Checking the pneumatic system 71
6.4 Repairs 73

7 Set-up instructions 75
7.1 Checking the scope of delivery 75
7.2 Removing the transport securing devices 76
7.3 Fitting the frame components 77
7.4 Completing the table plate 78
7.4.1 Completing a short arm table plate 78
7.4.2 Completing a long arm table plate 79
7.5 Fastening the table plate to the frame 80
7.6 Setting the working height 81
7.7 Controller 82
7.7.1 Fitting the control 83
7.7.2 Fit the pedal and setpoint device 84
7.8 Inserting the machine upper section 85
7.9 Fitting the oil extraction line 86
7.10 Fitting the knee lever 87
7.10.1 Fitting the mechanical knee lever 87
7.10.2 Fitting the electric knee lever 88
7.11 Fitting the control panel 89

7.12 Electrical connection 90
7.12.1 Checking the mains voltage 90
7.12.2 Fitting and connecting the sewing lamp and sewing lamp transformer 90
7.12.3 Establishing equipotential bonding 94
7.12.4 Connecting the controller 95
7.12.5 Connecting the sewing machine upper section 96
7.12.6 Fitting and connecting the Hall sensor 96
7.12.7 Connecting the electrical knee switch 99
7.12.8 Fitting the M-Control circuit board 100
7.12.9 Setting machine-specific parameters 102
7.13 Pneumatic connection 103
7.13.1 Fitting the maintenance unit 103
7.13.2 Setting the operating pressure 104
7.13.3 Pneumatic foot lifting 104
7.14 Lubrication 105
7.15 Sewing text 107

8 Disposal 109

9 Appendix 111
9.1 Table plate drawings 111
9.2 Table of maximum speeds 114

Contents

1 About this manual

1.1 Scope of application of the manual

This operating manual describes the set-up and intended use of the special sewing machine 867.
It applies to all submodels listed in Section 🕮 *3.4 Technical data*.

1.2 Applicable documentation

The device contains built-in components of other manufacturers, e.g. drive motors. The corresponding manufacturers have performed a hazard assessment for these purchased parts and confirmed compliance of the design with the European and national specifications. The intended use of the built-in components is described in the corresponding manuals of the manufacturers.

1.3 Damage during transport

Dürkopp Adler cannot be held liable for any damage during transport. Check the delivered product immediately after receiving it. Report any damage to the last transport manager.
This also applies if the packaging is not damaged.

Keep the machines, devices and packaging material in the condition they were at the time when the damage was identified. That secures any claims towards the transport company.

Report all other complaints to Dürkopp Adler immediately after receiving the product.

1.4 Limitation of liability

All information and notes in this operating manual have been compiled in accordance with the latest technology and the applicable standards and regulations.

The manufacturer accepts no liability for any damage due to:

- Failure to observe the instructions in the manual
- Improper use
- Unauthorized modifications to the machine
- The deployment of untrained personnel
- Damage during transport
- Using spare parts not approved

1.5 Symbols used

Correct setting

Specifies the correct setting.

Faults

Specifies the faults that can occur due to an incorrect setting.

Steps to be performed when operating the machine (sewing and equipping)

Steps to be performed for servicing, maintenance and installation

Steps to be performed via the software control panel

The individual steps are numbered:

1. 1. First step
2. 2. Second step
... The sequence of the steps must always be followed.

Result of performing an operation

Change to the machine or on the display

Important

Special attention must be paid to this point when performing a step.

Information

Additional information, e. g. on alternative operating possibilities.

Sequence

Specifies the work to be performed before or after a setting.

Reference

A reference is provided to another place in the text.

1.6 Figures

Depending on the submodel, the appearance of the machine varies in the following items:
Length of the machine arms, number of adjusting wheels, position of the stitch adjustment lever, presence of the keypad, etc.
When this makes no difference to the handling steps, the figures show only *one* machine version as an example.

2 Safety instructions

This section contains basic instructions for your safety. Read the instructions carefully before setting up, programming, maintaining or operating the machine. Make sure to follow the information included in the safety instructions. Failure to do this can result in serious injury and damage to the machine.

2.1 General safety instructions

Only authorized persons may use the machine. Every person who works with the machine must have read the operating manual first.

The machine may only be used as described in this manual.

The operating manual must be available at the machine's location at all times.

Also observe the safety instructions and the operating manual of the drive motor's manufacturer.

Observe the generally applicable safety and accident prevention regulations and the legal regulations concerning industrial safety and the protection of the environment.

All warnings on the machine must always be in legible condition and may not be removed. Missing or damaged labels must be replaced immediately.

For the following work, the machine must be disconnected from the power supply using the main switch or by disconnecting the power plug:

- Threading
- Replacing the needle or other sewing tools
- Leaving the workplace
- Performing maintenance work and repairs

Inspect the machine while in use for any externally visible damage. Interrupt your work if you notice any changes to the machine. Report any changes to your supervisor. A damaged machine may not be used any more.

Machines or machine parts that have reached the end of their service life must not continue to be used.
They must be disposed of according to the applicable legal requirements.

The machine may only be set up by qualified specialists.

Maintenance work and repairs may only be carried out by qualified specialists.

Safety equipment may not be removed or put out of service. If this cannot be avoided for a repair operation, the safety equipment must be refitted and put back into service immediately afterwards.

Work on electrical equipment may only be carried out by qualified electrical specialists.

The connecting cable must have a power plug approved in the specific country. The power plug may only be connected to the power cable by a qualified electrical specialist.

Work on live components and equipment is prohibited. Exceptions are defined in DIN VDE 0105.

Missing or faulty spare parts could impair safety and damage the machine. Therefore only use original spare parts from the manufacturer.

2.2 Signal words and symbols used in safety instructions

The safety instruction text is surrounded by colored bars.

Signal words specify the severity of a danger:

- **Danger**: Death or serious injury will occur.
- **Warning**: Death or serious injury is possible.
- **Caution**: Moderate to minor injuries are possible.
- **Attention**: Material damage is possible.

In the case of dangers to personnel, the following symbols indicate the type of hazard:

General danger

Danger due to electric shock

Danger due to sharp objects

Danger due to crushing

Examples of the layout of the safety instructions in the text:

DANGER

Type and source of the danger

Consequences in the event of noncompliance
Measures for avoiding the danger
This is what a hazard note looks like for a hazard that will result in serious injury or even death if not

WARNING

Type and source of the danger

Consequences in the event of noncompliance
Measures for avoiding the danger
This is what a hazard note looks like for a hazard that could result in serious injury or even death if not complied with.

CAUTION

Type and source of the danger

Consequences in the event of noncompliance
Measures for avoiding the danger
This is what a hazard note looks like for a hazard that could result in moderate or minor injury if not complied with.

ATTENTION

Type and source of the danger

Consequences in the event of noncompliance
Measures for avoiding the danger
This is what a hazard note looks like for a hazard that could result in material damage if not complied with.

3 Performance description

3.1 Features

The Dürkopp Adler 867 is a flatbed sewing machine for double lockstitches.

General technical characteristics

- Large or extra-large vertical hook
- Transport: Lower transport, needle transport and alternating foot-upper transport
- DC drive for all submodels
- Safety snap-on coupling for preventing any misadjustment of or damage to the hook in the event of a thread jamming
- Automatic wick lubrication for machine and hook with oil level indicator at the column
- Maximum passage with ventilated sewing feet: 20 mm
- Residual thread length with automatic thread cutter approx. 15 mm, with short thread cutter approx. 5 mm

Characteristics of the individual submodels

Depending on the respective submodel, the product is available

- as a 1-needle or 2-needle machine
- with or without an edge cutter
- with or without an automatic thread cutter
- with or without a keypad on the machine arm and additional switch for quick functions
- DLC coating of needle bar, thread presser bar and transport foot bar for oil-reduced operation
- Slip coating of needle plate and needle plate slides for reduced friction

Submodels with integrated motor

Submodels with the **-M** suffix have a direct drive mounted on the arm shaft. On ECO machines the controller is integrated into the motor cover. CLASSIC machines have a separate controller under the table plate.

Submodels of long arm machines

Submodels of long arm machines have suffixes of **-70** or **-100**, which specify the length of the arm throat.

3.2 Declaration of conformity

The machine complies with the European regulations specified in the declaration of conformity or in the installation declaration.

3.3 Intended use

The Dürkopp Adler 867 is intended for sewing moderately heavy to heavy material.

Depending on the submodel the following needle sizes are to be used:

- Light to moderately heavy material: 80 – 110 Nm
- Moderately heavy material: 110 – 140 Nm
- Heavy material: 140 – 180 Nm

The maximum sewing material thickness is 10 mm of pressed-together sewing material under the sewing foot.

The machine is only intended for processing dry material.

The sewing material must not contain any hard objects.

The sewing machine is intended for industrial use.

The manufacturer will not be held liable for damage resulting from improper use.

3.4 Technical data

3.4.1 Noise emission

Workplace-specific emission value as per DIN EN ISO 10821:

867-190322	**LC = 79 dB (A)**
At:	• Stitch length: 6 mm • Sewing foot stroke: 1.5 mm • Number of stitches: 2400 min^{-1} • Sewing material: 4-layer material G1 DIN 23328

3.4.2 Data overview by submodel

Shirt arm 1-needle machines with large hook (L)

Submodels: 867-	-160122	-190020	-190122	-190125	-190322	-190425
Sewing stitch type	Double lockstitch 301					
Hook type	Vertical hook, large (L)					
Number of needles	1					
Needle system	134-35					
Maximum needle strength [Nm]	130	180				
Maximum sewing thread size	120/3 – 30/3	80/3 – 10/3		15/3	80/3 –10/3	15/3
Stitch length, forwards / backwards [mm]	7 / 7	12 / 12				
Adjustable stitch lengths	1				2	
Maximum number of stitches	3800					
Number of stitches on delivery	3400	3000	3400			
Maximum fan height (*only with reversing mechanism)	16*	20	20*			
Maximum sewing foot stroke	9					
Positive operating pressure [bar]	6					
Air consumption [NL]	0.7					
Length/width/height [mm]	690/220/460					
Weight/with direct drive [kg]	55/59					
Rated voltage [V/Hz]	Depends on the drive package					
Rated power [kVA]	Depends on the drive package					

Short arm 1-needle machines with extra-large hook (XXL)

Submodels: 867-	-190040	-190142	-190145	-190146	-190342	-190445	-392040	-392342	-393342	-394342
Sewing stitch type	Double lockstitch 301									
Hook type	Vertical hook, extra-large (XXL)									
Number of needles	1									
Needle system	134-35									
Maximum needle strength [Nm]	180									
Maximum sewing thread thickness	80/3 – 10/3		15/3	20/3	80/3 – 10/3	15/3	80/3 – 10/3			
Stitch length, forwards / backwards [mm]	12 / 12									
Adjustable stitch lengths	1				2		1	2		
Maximum number of stitches	3400						3000			
Number of stitches on delivery	3000	3400					3000			
Maximum fan height (*only with reversing mechanism)	20	20*					20	20*		
Maximum sewing foot stroke	9									
Positive operating pressure [bar]	6									
Air consumption [NL]	0.7									
Length/width/height [mm]	690/220/460								690/320/460	
Weight/with direct drive [kg]	55/59						58			59
Rated voltage [V/Hz]	Depends on the drive package									
Rated power [kVA]	Depends on the drive package									

Short arm 2-needle machines

Submodels: 867-	-260122	-290020	-290040	-290122	-290142	-290322	-290342	-290445	-490322
Sewing stitch type	Double lockstitch 301								
Vertical hook, large (L)	x	x		x		x			x
Vertical hook, extra-large (XXL)			x		x		x	x	
Number of needles	2								
Needle system	134-35								
Maximum needle strength [Nm]	130	180							
Maximum sewing thread size	80/3 – 10/3							15/3	80/3 – 10/3
Stitch length, forwards / backwards [mm]	7 / 7	12 / 12							
Adjustable stitch lengths	1					2			
Maximum number of stitches	3400			3500	3200	3500	3200		3000
Number of stitches on delivery	3400	3000							
Maximum fan height (*only with reversing mechanism)	16*	20		20*					
Maximum sewing foot stroke	9								
Positive operating pressure [bar]	6								
Air consumption [NL]	0.7								
Length/width/height [mm]	690/220/460								
Weight/with direct drive [kg]	55/59								
Rated voltage [V/Hz]	Depends on the drive package								
Rated power [kVA]	Depends on the drive package								

Machines with integrated motor

Submodels: 867-	-190142-M	-190322-M	-190342-M
Sewing stitch type	Double lockstitch 301		
Vertical hook, large (L)		x	
Vertical hook, extra-large (XXL)	x		x
Number of needles	1		
Needle system	134-35		
Maximum needle strength [Nm]	180		
Maximum sewing thread size	80/3 – 10/3		
Stitch length, forwards / backwards [mm]	12 / 12		
Adjustable stitch lengths	1	2	
Maximum number of stitches	3400	3800	3400
Number of stitches on delivery	3400		
Maximum fan height (*only with reversing mechanism)	20*		
Maximum sewing foot stroke	9		
Positive operating pressure [bar]	6		
Air consumption [NL]	0.7		
Length/width/height [mm]	740/220/460		
Weight/with direct drive [kg]	58		
Rated voltage [V/Hz]	230 V - 50/60 Hz		
Rated power [kVA]	375 W		

Long arm 1-needle machines

Submodels: 867-	-190020-70	-190040-70	-190122-70	-190322-70	-190342-70
Sewing stitch type	Double lockstitch 301				
Vertical hook, large (L)	x		x	x	
Vertical hook, extra-large (XXL)		x			x
Number of needles	1				
Needle system	134-35				
Maximum needle strength [Nm]	180				
Maximum sewing thread size	80/3 – 10/3				
Stitch length, forwards / backwards [mm]	12 / 12				
Adjustable stitch lengths	1	1	1	2	2
Maximum number of stitches	3000				
Number of stitches on delivery	3000				
Maximum fan height (*only with reversing mechanism)	20	20	20*	20*	20*
Maximum sewing foot stroke	9				
Positive operating pressure [bar]	6				
Air consumption [NL]	0.7				
Length/width/height [mm]	1090/220/460				
Weight/with direct drive [kg]	85/89				
Rated voltage [V/Hz]	Depending on the drive package				
Rated power [kVA]	Depending on the drive package				

Long arm 2-needle machines

Submodels: 867-	-290020-70	-290040-70	-290122-70	-290322-70	-290342-70	-290342-100
Sewing stitch type	Double lockstitch 301					
Vertical hook, large (L)	x		x	x		
Vertical hook, extra-large (XXL)		x			x	x
Number of needles	2					
Needle system	134-35					
Maximum needle strength [Nm]	180					
Maximum sewing thread size	80/3 – 10/3					
Stitch length, forwards / backwards [mm]	12 / 12					
Adjustable stitch lengths	1	1	1	2	2	2
Maximum number of stitches	3000					2500
Number of stitches on delivery	3000					2500
Maximum fan height (*only with reversing mechanism)	20	20	20*	20*	20*	20*
Maximum sewing foot stroke	9					
Positive operating pressure [bar]	6					
Air consumption [NL]	0.7					
Length/width/height [mm]	1090/220/460					1390/ 220/460
Weight/with direct drive [kg]	85/89					95/99
Rated voltage [V/Hz]	Depending on the drive package					
Rated power [kVA]	Depending on the drive package					

3.4.3 Additional equipment and manuals

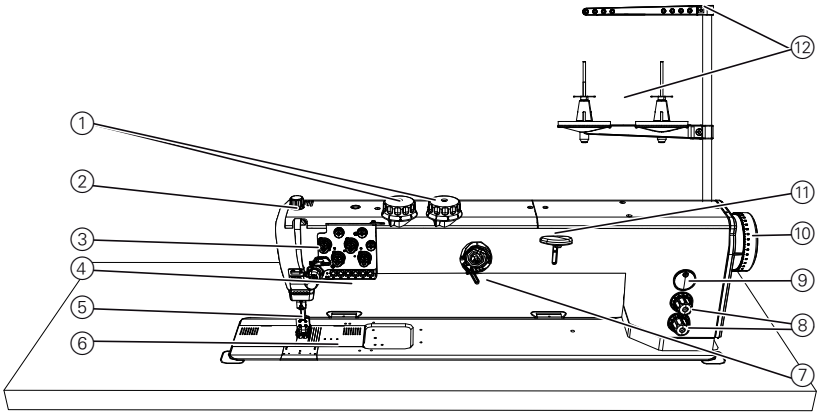
Additional equipment and manuals can be requested from the Dürkopp Adler Applications Center (APC).

E-mail: marketing@duerkopp-adler.com

Additional manuals and further **Documentation** are available in the download area of the Dürkopp Adler Internet site: http://www.duerkopp-adler.com/de/main/Support/downloads.

4 Device description

Figure 1: General overview - Long arm machine example



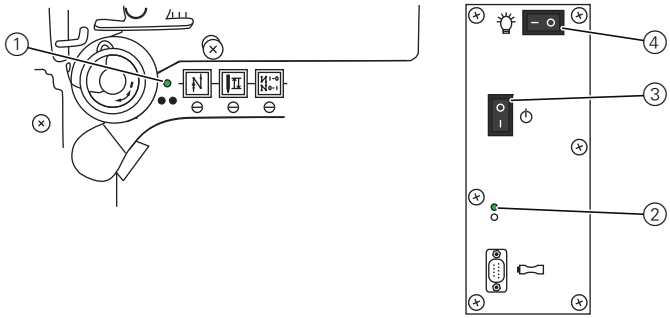
(1) - Adjusting wheels for the sewing foot stroke
(2) - Adjusting wheel for the sewing foot pressure
(3) - Thread tensioners
(4) - Keypad on the machine arm
(5) - Sewing foot with needle
(6) - Hook (under the needle plate)
(7) - Bobbin winder for the hook thread
(8) - Adjusting wheels for the stitch length
(9) - Oil level indicator
(10) - Handwheel
(11) - Stitch adjustment lever
(12) - Unwinding bracket with thread reel holder

5 Operating instructions

5.1 Switching the power supply on and off

The lower main switch (2) on the control regulates the power supply.

Figure 2: Switching the power supply on and off



(1) - Indicator lamp on the keypad
(2) - Indicator lamp on the control
(3) - Main power switch
(4) - Switch for the sewing lamp

To switch on the power:

1. Press the main switch (3) down to position I.
   ↳The indicator lamps (1) and (2) light up.

To switch off the power:

1. Press the main switch (3) up to position 0.
   ↳The indicator lamps (1) and (2) go out.

5.2 Inserting and replacing the needle

WARNING

Risk of injury by the needle point and moving parts.
Switch off the sewing machine before replacing the needle.
Do not touch the needle point.

Sequence

After changing to a needle of a different size adjust the clearance between the hook and the needle (📖 *Service manual Section 11.1 Adjusting the hook side clearance*).

ATTENTION

Damage to the machine, needle breakage or thread damage is possible through an incorrect clearance between the needle and hook tip.
Check the clearance to the hook tip after inserting a new needle of a different size. Adjust this if necessary.

Faults caused by an incorrect hook clearance

After inserting a thinner needle:

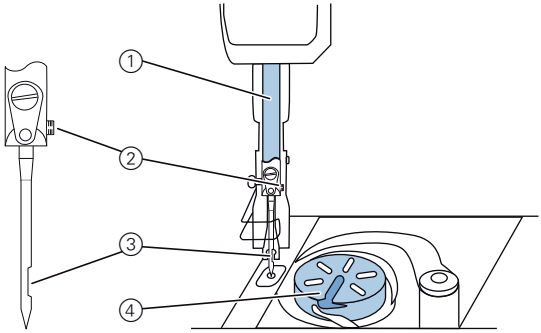
- Missing stitches
- Thread damage

After inserting a thinner needle:

- Damage to the hook tip
- Damage to the needle

5.2.1 Needle change on 1-needle machines

Figure 3: Inserting and changing needles on 1-needle machines

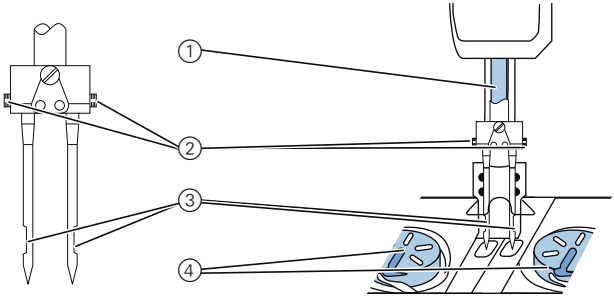


(1) - Needle bar
(2) - Fastening screw
(3) - Groove
(4) - Hook

1. Turn the handwheel until the needle bar (1) reaches the upper end position.
2. Loosen the fastening screw (2).
3. Pull the needle out towards the bottom.
4. Insert the new needle.
5. **Important:** Align the needle so that the groove (3) faces the hook (4).
6. Tighten the fastening screw (2).

5.2.2 Needle change on 2-needle machines

Figure 4: Inserting and changing needles on 2-needle machines

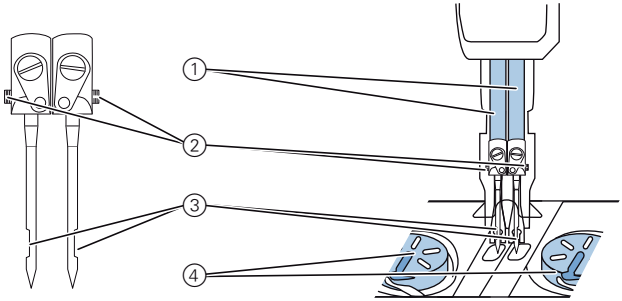


(1) - Needle bar
(2) - Fastening screw
(3) - Groove
(4) - Hook

1. Turn the handwheel until the needle bar (1) reaches the upper end position.
2. Loosen the fastening screws (2) on both sides.
3. Pull each of the needles out downwards.
4. Insert new needles on both sides.
5. **Important:** Align the needles so that the grooves (3) face away from each other. Each groove then faces the hook that belongs to this needle.
6. Tighten the fastening screws (2) on both sides.

5.2.3 Changing needles on switchable needle bars

Figure 5: Inserting and changing needles on switchable needle bars



(1) - Needle bar
(2) - Fastening screw
(3) - Groove
(4) - Hook

1. Turn the handwheel until the needle bars (1) reach the upper end position.
2. Loosen the fastening screws (2) on both sides.
3. Pull each of the needles out downwards.
4. Insert new needles on both sides.
5. **Important:** Align the needles so that the grooves (3) face away from each other. Each groove then faces the hook that belongs to this needle.
6. Tighten the fastening screws (2) on both sides.

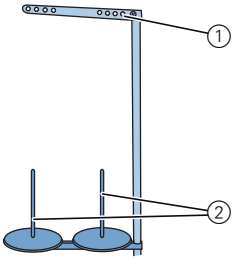
5.3 Threading in the needle thread

WARNING

Risk of injury by the needle point and moving parts.
Switch off the sewing machine before inserting the thread.

In all machines the thread from the thread reel is fed to the machine via the unwinding bracket.

Figure 6: Thread guide on the unwinding bracket and machine arm

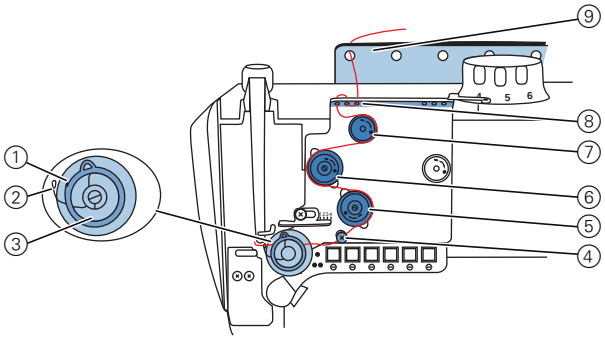


(1) - Guide on unwinding bracket
(2) - Thread reel holder

1. Fit the thread reel on the thread reel holder (2).
2. Insert the thread from the rear to the front through a hole in the guide on the unwinding bracket (1).

5.3.1 Needle thread threading on 1-needle machines

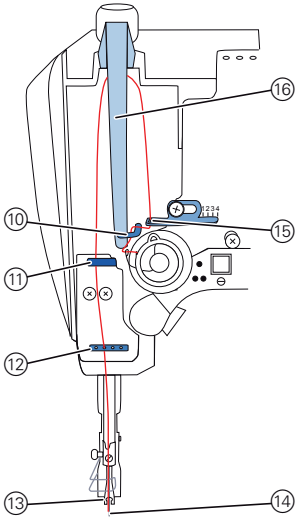
Figure 7: Threading procedure for needle thread - part 1



(1) - Tightening lever
(2) - Spring tip
(3) - Thread tensioning spring
(4) - Diverter pin
(5) - Main tensioner
(6) - Additional tensioner
(7) - Preliminary tensioner
(8) - 2nd Thread guide
(9) - 1st Thread guide

3. Insert the thread from the rear to the front through the left hole in the 1st thread guide (9).
4. Insert the thread in a wavelike manner through the 3 holes of the 2nd thread guide (8): From above to below through the right hole, then from below to above through the hole in the middle and finally from below to above through the left hole.
5. Guide the thread clockwise around the pre-tensioner (7).
6. Guide the thread counterclockwise around the additional tensioner (6).
7. Guide the thread clockwise around the main tensioner (5).
8. Guide the thread under the diverter pin (4) to the thread tensioning spring.
9. Lift the tightening lever (1) with the thread.
10. Pull the thread under the spring tip (2).

Figure 8: Threading procedure for needle thread - part 2



(10) - Hook
(11) - Upper thread guide
(12) - lower thread guide
(13) - Thread guide on the needle bar
(14) - Needle eye
(15) - Thread regulator
(16) - Thread lever

11. Guide the thread under the hook (10).
12. Insert the thread from bottom to top through the hole on the thread regulator (15).
13. Insert the thread from the right to the left through the thread lever (16).
14. Insert the thread through the upper thread guide (11).
15. Insert the thread through a hole in the lower thread guide (12).
16. Insert the thread through the thread guide on the needle bar (13).
17. Insert the thread through the needle eye (14) in such a way that the loose thread end faces the hook.

Short thread cutter

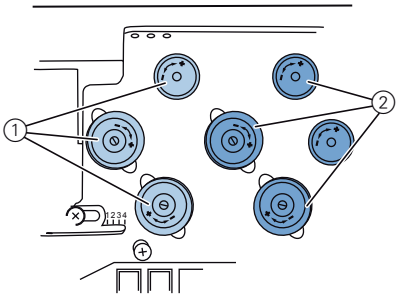
18. **For machines with a short thread cutter:**
Pull the thread through the needle eye (14) until the loose thread end has a length of approx. 4 cm with the thread catcher (16) in the highest position.

Important: Check the thread length.
The short thread cutter does not function correctly when the loose thread end is too long.

5.3.2 Needle thread threading on 2-needle machines

2-needle machines are equipped with a second tensioning screw triangle for the 2nd needle thread. The threading procedure corresponds to that for the 1st needle thread (Section *5.3.1 Needle thread threading on 1-needle machines*, Page 29).

Figure 9: Needle thread threading procedure for 2-needle machines



(1) - Tensioning screws in triangular arrangement for the first needle thread

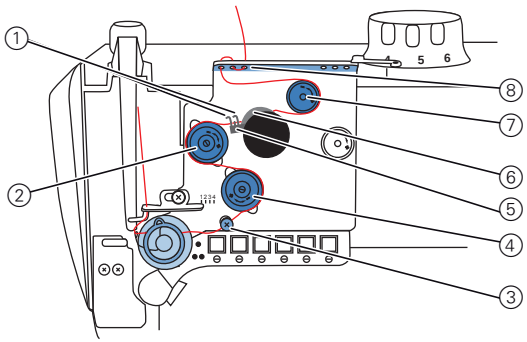
(2) - Tensioning screws in triangular arrangement for the second needle thread

1. Guide the threads through the guides and around the tensioning screws in such a way that the threads do not intersect.
2. First guide the left-hand needle thread through the left-hand guide holes and around the left-hand tensioning screw triangle (1).
3. First guide the left-hand needle thread through the right-hand guide holes and around the right-hand tensioning screw triangle (2).

5.3.3 Needle thread threading on machines with a clean seam start

The clean seam start parts set provides a short and cleanly sewn needle thread at the start of the seam. After the 1st stitch the needle thread is clamped by the thread clamp (6) and pulled back by the thread retractor (5) so that the needle thread only protrudes by a small amount. The exact settings are described in 🕮 *Additional manual 0791 867708*.

Figure 10: Threading scheme for machines with a clean seam start



(1) - Eyes
(2) - Additional tensioner
(3) - Diverter pin
(4) - Main tensioner
(5) - Thread retractor
(6) - Thread clamp
(7) - Preliminary tensioner
(8) - Thread guide

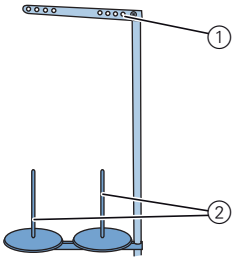
1. Insert the thread in a wavelike manner through the 3 holes of the thread guide (8): From above to below through the left hole, then from below to above through the middle hole and finally from above to below through the left hole.
2. Guide the thread clockwise around the pre-tensioner (7).
3. Insert the thread through the thread clamp (6).
4. Insert the thread through the two eyes (1) and the guide on the thread retractor (5).
5. Guide the thread counterclockwise around the additional tensioner (2).
6. Guide the thread clockwise around the main tensioner (4).
7. Guide the thread around the diverter pin (3) from above.
8. Proceed with step 9 (🕮 Section *5.3.1 Needle thread threading on 1-needle machines*, Page 29) in a normal threading scheme.

5.4 Inserting and winding on the hook thread

WARNING

Risk of injury by the needle point and moving parts.
Switch off the sewing machine before inserting the thread.

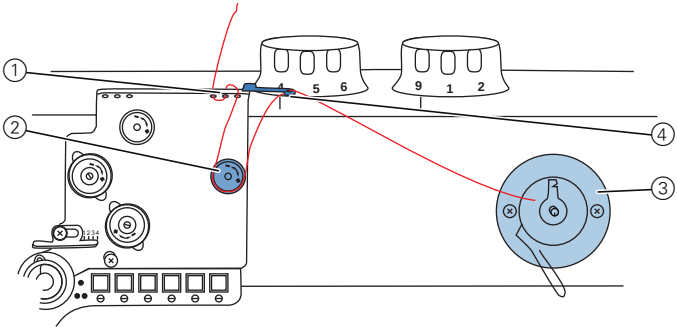
Figure 11: Thread guide on the unwinding bracket and machine arm



(1) - Guide on unwinding bracket
(2) - Thread reel holder

1. Fit the thread reel on the thread reel holder (2).
2. Insert the thread from the rear to the front through a hole in the guide on the unwinding bracket (1).

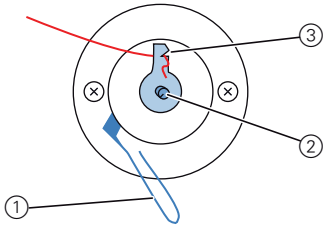
Figure 12: Winding on the hook thread – part 1



(1) - Thread guide
(2) - Preliminary tensioner
(3) - Bobbin
(4) - Hook thread guide

3. Insert the thread in a wavelike manner through the 3 holes of the thread guide (1): from top to bottom through the left hole, from bottom to top through the hole in the middle and finally from top to bottom through the right hole.
4. Guide the thread counterclockwise around the pre-tensioner (2).
5. Insert the thread in a wavelike manner through the 2 holes of the hook thread guide (4): from bottom to top through the left hole and from top to bottom through the right hole.
6. Guide the thread to the bobbin (3).

Figure 13: Winding on the hook thread – part 2



(1) - Bobbin lever
(2) - Bobbin shaft
(3) - Cutter

7. Clamp the thread behind the cutter (3) and tear off the loose end behind it.
8. Fit the bobbin on the bobbin shaft (2).
9. Turn the bobbin clockwise until it clicks.
10. Pull the bobbin lever (1) up.

The hook thread is normally wound on when sewing is in progress. However, you can also wind on the hook thread without sewing, e.g. if you require a full bobbin in order to start sewing.

ATTENTION

Damage to the sewing feet or needle plate possible if the thread is wound on without material.
Lock the sewing feet in place in the highest position and adjust the sewing foot stroke to the smallest value if you wind on hook thread without sewing material.

Winding procedure

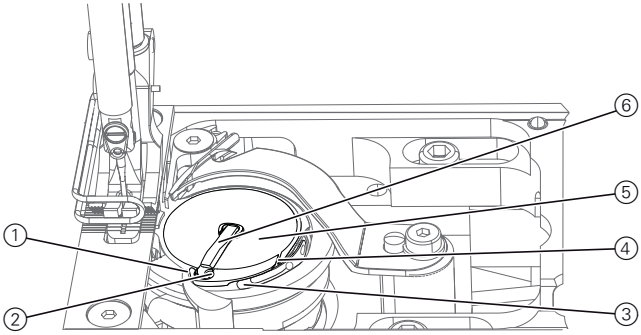
1. Switch on the sewing machine.
2. Press the foot pedal forwards.
   ↳The machine sews and winds the hook thread from the thread reel onto the bobbin.
   When the bobbin is full, the machine automatically stops winding. The bobbin lever moves down.
   The cutter is automatically moved into its basic vertical position.
3. Pull off the full bobbin.
4. Tear off the thread behind the cutter.
5. Insert the full bobbin in the hook
   (📖 Section *5.5 Replacing the hook thread bobbin*, Page 36).
6. Repeat the winding-on procedure with an empty bobbin, as described above.

5.5 Replacing the hook thread bobbin

WARNING

Risk of injury by the needle point and moving parts.
Switch off the sewing machine before replacing the hook thread bobbin.

Figure 14: Replacing the hook thread bobbin



(1) - Slot
(2) - Guide
(3) - Tension spring
(4) - Slot
(5) - Bobbin
(6) - Bobbin housing flap

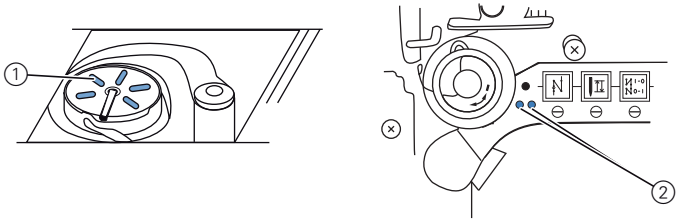
1. Fold up the bobbin housing flap (6).
2. Remove the empty bobbin.
3. Insert a full bobbin:

   Important: insert the bobbin so that it moves in the opposite direction of the hook when the thread is pulled out.
4. Feed the hook thread through the slot (4) in the bobbin housing.
5. Pull the hook thread under the tensioning spring (3).
6. Feed the hook thread through the slot (1) and pull it approx. 3 cm further.
7. Close up the bobbin housing flap (6).

Automatic residual thread monitor

For machines with automatic residual thread monitor:
If the hook thread needs to be replaced, the LED indicator lamps (2) light up on the machine arm. The left light is for the left-hand hook and the right light is for the right-hand hook.

Figure 15: Residual thread monitor



(1) - Vision slot on the bobbin

(2) - LEDs on the machine arm

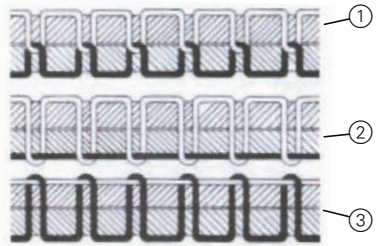
The bobbin plate has vision slots on one side.

Important: Insert the bobbin in the hook in such a way that the vision slots (1) are at the top. Otherwise the residual thread monitor will not work.

5.6 Thread tension

The tension of needle thread and hook thread determines the position of the thread interlacing. If the tension of needle thread and hook thread is high, the thread interlacing lies in the middle of the material to be sewn.

Figure 16: Thread interlacing



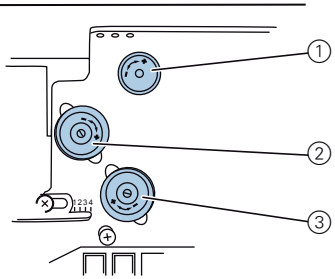
(1) - Identical needle thread and hook thread tension
(2) - Hook thread tension higher than needle thread tension
(3) - Needle thread tension higher than hook thread tension

5.6.1 Adjusting the needle thread tension

The 3 tension-adjusting wheels on the tensioning screw triangle determine the needle thread tension.

In the basic position, the top of the adjusting wheel is flush with the screw in the center.

Figure 17: Adjusting the needle thread tension



(1) - Preliminary tensioner
(2) - Additional tensioner
(3) - Main tensioner

To increase the tension:

1. Turn the adjusting wheel clockwise.

To reduce the tension:

1. Turn the adjusting wheel counterclockwise.

Main tension

The main tension (3) determines the normal tension during sewing.

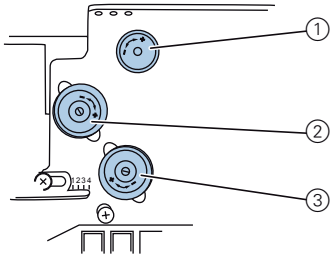
Correct setting

The main tension should be set as low as possible. The thread interlacing should be exactly in the middle of the material being sewn.

Faults due to excessively high tension

- Crimping
- Thread breakage

Figure 18: Preliminary tension



(1) - Preliminary tensioner
(2) - Additional tensioner
(3) - Main tensioner

Preliminary tension

The preliminary tensioner (1) holds the thread in position if the main tensioner (3) and additional tensioner (2) are completely open.

Automatic thread cutter

For machines with automatic thread cutter:
The preliminary tension (1) also determines the length of the initial thread for the new seam:

Short initial thread:

1. Turn the adjusting screw of the pre-tensioner (1) clockwise.

Long initial thread:

1. Turn the adjusting screw of the pre-tensioner (1) counterclockwise.

Additional tensioner

The additional tensioner (2) increases the tension during sewing, e.g. for thickened seams.

Correct setting

The additional tension (2) must always be selected lower than the main tension (3).

The additional tension can be switched on and off manually or automatically.

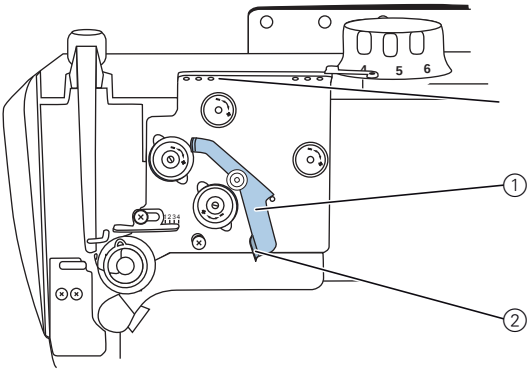
Automatic switching of the additional tension

On CLASSIC machines with a keypad on the machine arm, additional tension is switched on and off via the corresponding function key on the keypad
(📖 Section *5.13 Quick functions on the keypad*, Page 56).

Manual switching of the additional tension

On machines without a keypad on the machine arm the additional tension is switched on and off via the lever on the tensioning triangle.

Figure 19: Switching additional tension on and off on ECO machines



(1) - Lever *(2) - Handle*

Switching additional tension on:

1. Slide handle (2) of the lever (1) all the way to the left.

Switching additional tension off:

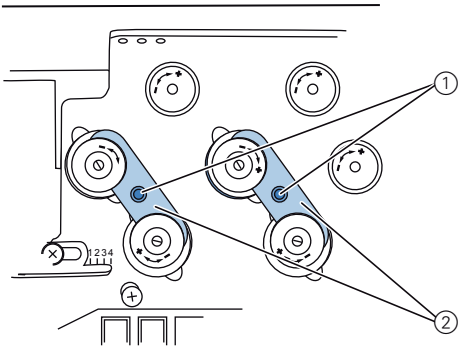
1. Slide handle (2) of the lever (1) all the way to the right.

5.6.2 Removing blocking of the needle thread tension

Automotive: Blockable adjusters

Machines with blockable adjusters are used especially in the automotive sector. With these machines the blocking must be removed before the sewing foot pressure can be adjusted.

Figure 20: Removing blocking of the needle thread tension



(1) - Fastening screw *(2) - Retaining plate*

1. Loosen the fastening screws (1).
2. Remove the retaining plate (2).
3. Adjusting the needle thread tension (📖 Section *5.6.1 Adjusting the needle thread tension*, Page 38).
4. Fit the retaining plate (2).
5. Tighten the fastening screws (1).

5.6.3 Opening the needle thread tensioner

- **ECO machines:**

  The needle thread tensioner is automatically opened when the sewing foot is lifted via the knee lever.

- **CLASSIC machines:**

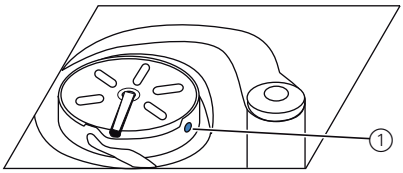
  The needle thread tensioner is automatically opened when the thread is cut.

5.6.4 Adjusting the hook thread tension

WARNING

Risk of injury by the needle point and moving parts.
Switch off the sewing machine before adjusting the hook thread tension.

Figure 21: Adjusting the hook thread tension



(1) - Adjusting screw

The hook thread tension is adjusted using the adjusting screw (1).

To increase the tension:

1. Turn the adjusting screw (1) clockwise.

To reduce the tension:

1. Turn the adjusting screw (1) counterclockwise.

5.7 Setting the thread regulator

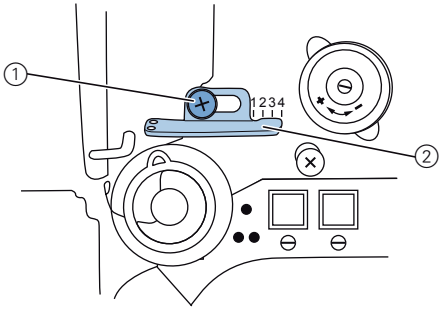
WARNING

Risk of injury by the needle point and moving parts.
Switch off the sewing machine before setting the thread regulator.

The thread regulator determines the tension applied to guide the needle thread around the hook.

Correct setting:
The loop of the needle thread slides at low tension over the thickest point of the hook.

Figure 22: Setting the thread regulator



(1) - Regulator screw *(2) - Thread regulator*

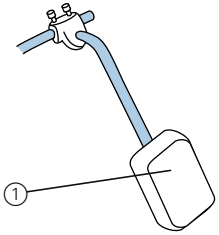
1. Loosen the regulator screw (1).
   - **To increase the tension:**
     Slide the thread regulator (2) to the right
   - **To reduce the tension:**
     Slide the thread regulator (2) to the left
2. Tighten the regulator screw (1).

5.8 Venting the sewing foot

- **ECO machines**: Mechanically via the knee lever
- **CLASSIC machines**: Electro-pneumatically via a foot pedal

5.8.1 Mechanical lifting with the knee lever

Figure 23: Mechanical sewing foot lifting with the knee lever

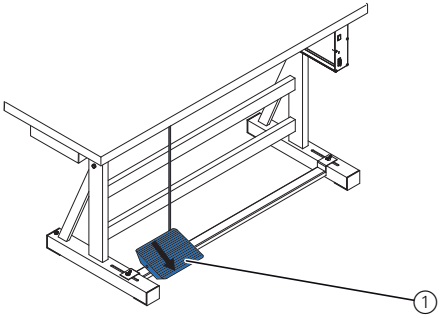


(1) - Knee lever

1. Push the knee lever (1) to the right.
   ↳The sewing feet remain open while the knee lever is pushed to the right.

5.8.2 Electro-pneumatic lifting with a foot pedal

Figure 24: Electro-pneumatic sewing foot lifting with a foot pedal



(1) - Foot pedal

1. Press the foot pedal (1) half the way back.
   ↳The machine stops and raises the sewing feet.
   The sewing feet remain up as long as the foot pedal is pressed halfway back.

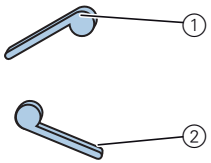
or

1. Press the foot pedal (1) fully back.
   ↳The thread cutter is activated and the sewing feet are raised.

5.9 Locking the sewing feet in the upper position

There is a lever at the back of the machine for holding the sewing feet in the upper position.

Figure 25: Holding the sewing feet in the upper position with the lever



(1) - Sewing feet in upper position
(2) - Upper position canceled

To hold the sewing feet in the upper position:

1. Push the lever down.

To cancel the lock:

1. Push the lever up.

You can also use the foot pedal to cancel the upper position:

1. Press the foot pedal halfway back as when lifting the sewing feet.

   ↳The lever swivels back up and the lock is removed.

CAUTION

Risk of crushing when lowering the sewing foot.
Do not hold your hands under the sewing foot when the upper position is released via the pedal or lever.

5.10 Setting the sewing foot pressure

The adjusting wheel at the top left determines the contact pressure of the sewing foot on the material to be sewn. The pressure can be adjusted continuously by turning the wheel.

The correct pressure depends on the material to be sewn:

- Lower pressure for soft materials, e.g. cloth
- Higher pressure for harder materials, e.g. leather

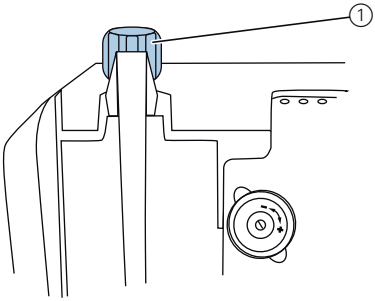
Correct setting

The material being sewn does not slip and is correctly transported.

Faults due to incorrect sewing foot pressure

- Excessively high pressure: Tearing of the material being sewn
- Excessively low pressure: Slipping of the material being sewn

Figure 26: Adjusting wheel for the sewing foot pressure



(1) - Adjusting wheel for the sewing foot

To increase the sewing foot pressure:

1. Turn the adjusting wheel (1) clockwise.

To reduce the sewing foot pressure:

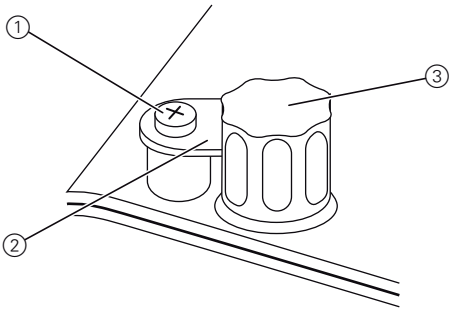
1. Turn the adjusting wheel (1) counterclockwise.

5.10.1 Removing blocking of the adjusting wheel

Automotive: Blockable adjusters

Machines with blockable adjusters are used especially in the automotive sector. With these machines the blocking must be removed before the sewing foot pressure can be adjusted.

Figure 27: Removing blocking of the sewing foot pressure adjustment wheel



(1) - Fastening screw
(2) - Retaining plate
(3) - Adjusting wheel for the sewing foot pressure

1. Loosen the fastening screw (1).
2. Remove the retaining plate (2).
3. Turn the adjusting wheel for the sewing foot pressure (3) (📖 Section *5.10 Setting the sewing foot pressure*, Page 46).
4. Fit the retaining plate (2).
5. Tighten the fastening screw (1).

5.11 Setting the sewing foot stroke

5.11.1 Limiting of number of stitches with an increased sewing foot stroke

CLASSIC machines have a potentiometer on the arm shaft. The potentiometer automatically adapts the number of stitches to the sewing foot stroke: If you increase the sewing foot stroke, the number of stitches is automatically reduced.

Important: ECO machines do not have automatic reduction of the number of stitches. On ECO machines the operator must ensure that the number of stitches (📖 Section *9.2 Table of maximum speeds*, Page 114) specified in the tables in the appendix is not exceeded.

ATTENTION

Possible damage to the machine through an excessively high number of stitches with an increased sewing foot stroke.

Ensure that the number of stitches specified in the appendix tables for the respective combination of stitch length and sewing foot stroke is not exceeded.

On ECO machines, do not press the pedal too far forwards when sewing with a large sewing foot stroke and large stitch lengths.

Do not change the potentiometer setting on CLASSIC machines.

5.11.2 Setting the stroke height

Depending on the equipment the machine has 1 or 2 adjusting wheels for the sewing foot stroke. The sewing foot stroke is continuously adjustable over a range of 1 – 9 mm by turning the adjusting wheel.

On machines with 2 adjusting wheels, the left adjusting wheel (1) sets the normal sewing foot stroke and the right adjusting wheel (2) sets the elevated sewing foot stroke.

Important: The elevated sewing foot stroke must not be lower than the normal sewing foot stroke. Always set the sewing foot stroke at the right adjusting wheel so that it is at least as high as the sewing foot stroke at the left adjusting wheel.

ATTENTION

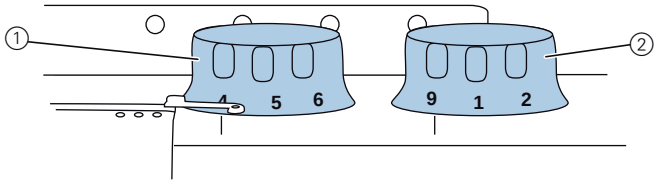
Machine damage possible if the adjusting wheels are turned using brute force.

The machine is designed in such a way that the sewing foot stroke at the right adjusting wheel cannot be set lower than at the left adjusting wheel.

Do not attempt to use brute force to set a smaller sewing foot stroke at the right adjusting wheel.

On machines with only 1 adjusting wheel the highest stroke of 9 mm is automatically switched as the elevated sewing foot stroke.

Figure 28: Adjusting wheels for the sewing foot stroke



(1) - Adjusting wheel for the normal sewing foot stroke

(2) - Adjusting wheel for the elevated sewing foot stroke (CLASSIC equipment)

To increase the sewing foot stroke:

1. Turn the adjusting wheel clockwise.

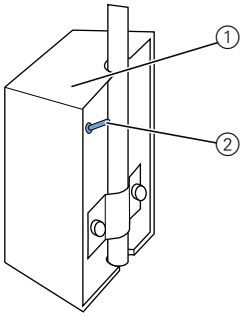
To reduce the sewing foot stroke:

1. Turn the adjusting wheel counterclockwise.

5.11.3 Quick stroke adjustment via knee switch

On machines with quick stroke adjustment activated via a knee switch the elevated sewing foot stroke is switched via the knee switch. The toggle switch on the rear side of the knee switch determines whether the elevated sewing foot stroke is permanently switched on or only while the knee switch is pressed.

Figure 29: Quick stroke adjustment via knee switch



(1) - Knee switch
(2) - Toggle switch

For permanent conversion:

1. Set the toggle switch (2) to the upper position.
   - **To switch on the elevated sewing foot stroke:** Push the knee switch (1) to the right.
   - **To switch off the elevated sewing foot stroke:** Push the knee switch (1) to the right again.

For temporary conversion:

1. Set the toggle switch (2) to the lower position.
   - **To switch on the elevated sewing foot stroke:** Push the knee lever knee switch (1) to the right and keep it pressed.

↳The elevated sewing foot stroke is retained as long as the knee switch is pushed to the right.

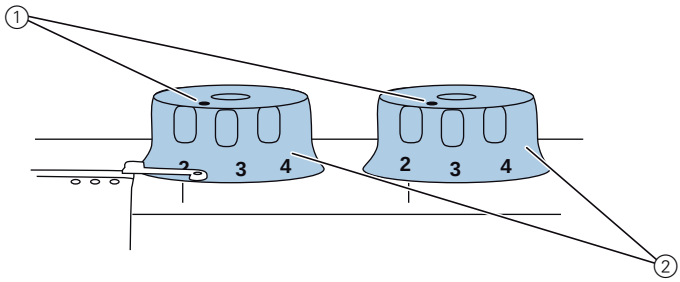
- **To switch off the elevated sewing foot stroke:** Release the knee lever (1).

5.11.4 Removing blocking of the sewing foot pressure adjustment wheel

Automotive: Blockable adjusters

Machines with blockable adjusters are used especially in the automotive sector. With these machines the blocking must be removed before the sewing foot stroke can be adjusted.

Figure 30: Removing blocking of the sewing foot pressure adjustment wheel



(1) - Adjusting wheels for the sewing foot stroke

1. Loosen the fastening screws (2).
2. Turn the adjusting wheel for the sewing foot stroke (1) (📖 Section *5.11 Setting the sewing foot stroke*, Page 48).
3. Tighten the fastening screws (2).

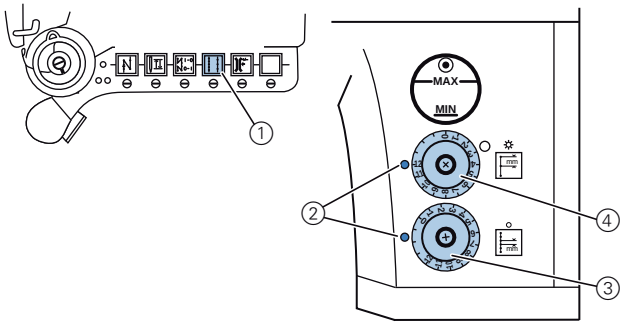
5.12 Stitch length

5.12.1 Adjusting the stitch length

Depending on the equipment the machine has 1 or 2 adjusting wheels for the stitch length.

The stitch length can be adjusted continuously between 0 – 12 mm.

Figure 31: Adjusting wheels for the stitch length



(1) - Keypad key for the stitch length
(2) - Adjusting marks for indicating the stitch length selected
(3) - Lower adjusting wheel for the smaller stitch length
(4) - Upper adjusting wheel for the larger stitch length

To reduce the stitch length:

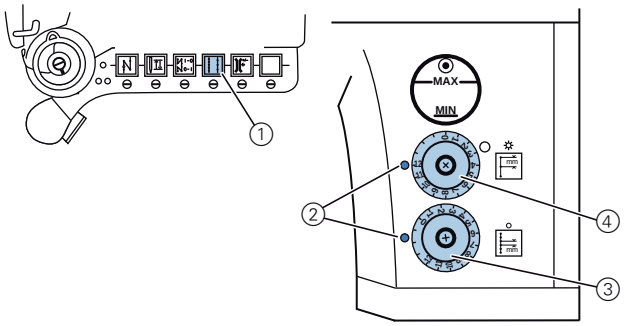
1. Turn the adjusting wheel clockwise.

To increase the stitch length:

1. Turn the adjusting wheel counterclockwise.

5.12.2 Sewing with 2 stitch lengths

Figure 32: Sewing with 2 stitch lengths



(1) - Keypad key for the stitch length
(2) - Adjusting marks for indicating the stitch length selected
(3) - Lower adjusting wheel for the smaller stitch length
(4) - Upper adjusting wheel for the larger stitch length

On machines with 2 stitch length adjusting wheels the upper adjusting wheel (4) is for the larger stitch length and the lower adjusting wheel (3) is for the smaller stitch length. The adjusting mark (2) on the left on the wheel indicates the stitch length selected.

Important: The larger stitch length must not be shorter than the smaller stitch length. Always select a higher stitch length at the upper adjusting wheel (4) than at the lower adjusting wheel (3).

ATTENTION

Machine damage possible if the adjusting wheels are turned using brute force.
The machine is designed in such a way that a lower stitch length cannot be selected at the upper adjusting wheel than at the lower adjusting wheel.
Do not attempt to use brute force to select a smaller stitch length at the upper adjusting wheel.

5.12.3 Removing blocking of the adjusting wheel

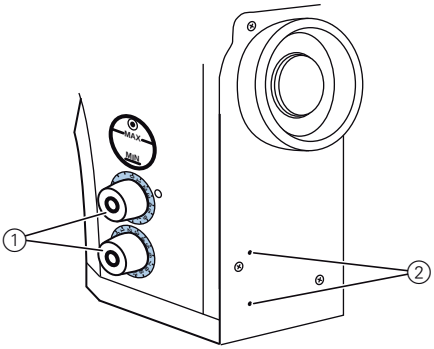
Automotive: Blockable adjusters

Machines with blockable adjusters are used especially in the automotive sector. With these machines the blocking must be removed before the stitch length can be adjusted.

WARNING

Risk of injury from moving parts.
Switch off the sewing machine before removing blocking of the stitch length adjusting wheels.

Figure 33: Removing blocking of the stitch length adjusting wheels



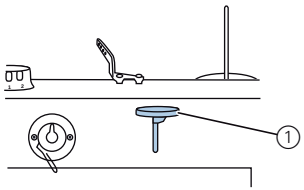
(1) - Adjusting wheels for the stitch length

1. Insert a 3 mm hex key through the access holes (2) and release the blocking screws for the stitch length adjusting wheels.
2. Turn the stitch length adjusting wheels (1) (📖 Section *5.12 Stitch length*, Page 52).
3. Insert a 3 mm hex key through the access holes (2) and tighten the blocking screws for the stitch length adjusting wheels.

5.12.4 Sewing backwards

The stitch adjustment lever on the machine arm reduces the stitch length down to sewing backwards in the lower end position.

Figure 34: Stitch adjustment lever on the machine arm



(1) - Stitch adjustment

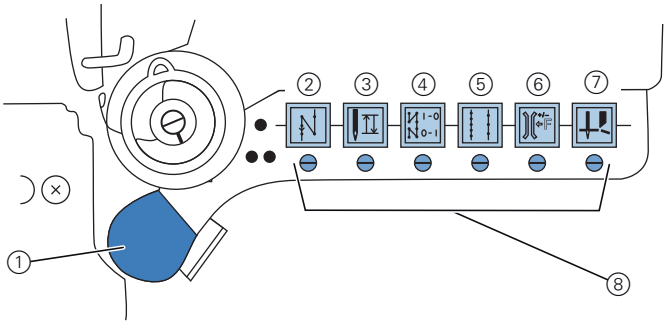
1. Slowly push the stitch adjustment lever (1) down.
   ↳The stitch length becomes smaller. In the lower end position, the machine sews backwards with the stitch length selected at the adjusting wheels.

5.13 Quick functions on the keypad

Depending on the submodel, the machine has a keypad on the machine arm allowing activation of particular functions while sewing.

5.13.1 Activating function keys

Figure 35: Keypad for quick functions



(1) - Additional switch
Keys for:
(2) - Sewing backwards
(3) - Needle position
(4) - Start and end strip
(5) - Stitch length
(6) - Additional thread tension
(7) - Vertical cutter
(8) - Screws for the assignment of the additional switch (1)

Activating a key function

1. Press the key.

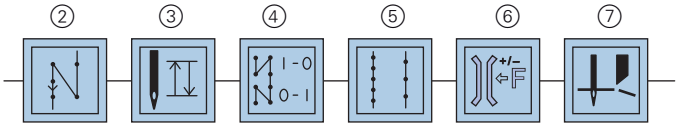
   ↳The function is activated. The key lights up.

Deactivating a key function

1. Press the key again.

   ↳The function is deactivated. The key does not light up any more.

Figure 36: Function keys



Key for sewing backwards (2):

If the key (2) is selected the machine sews backwards.

Key for the position of the needle (3):

If the key (3) is selected the needle moves to a specific position. This position is determined individually via the parameter settings. For more information read the 🕮 *service manual*.
On delivery, the machine is set so that the needle is moved up when the key (3) is activated.

Key for the start and end strips (4):

Key (4) cancels the general setting for sewing start and end strips. If strips are switched on, pressing the key (4) disables the next strip. If no strips are switched on, pressing the key (4) sews the next strip. For the general setting for sewing start and end strips, refer to the 🕮 *manual for the DAC Classic controller*.

Key for the stitch length (5):

If the key (5) is selected, the machine sews using the larger stitch length selected at the upper adjusting wheel for the stitch length.

Key for the additional thread tension (6):

Key (6) switches on the additional thread tension.

Key for the vertical cutter (7):

(only for machines with a vertical cutter)

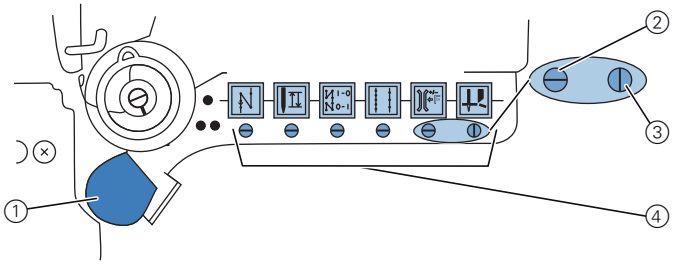
Key (7) switches on the vertical cutter.

When lifting the sewing foot the cutter is automatically switched off and the key (7) is deactivated.

5.13.2 Transferring a key function to the additional switch

You can transfer one of the key functions to the additional switch. Select a function that you require frequently to be able to switch it on faster while sewing.

Figure 37: Transferring a key function to the additional switch



(1) - Additional switch
(2) - Screw in basic position: slot horizontal
(3) - Screw activates the additional switch (1): slot vertical
(4) - Screws for the assignment of the additional switch (1)

The key function is transferred by turning the screw under the key until it is vertical. Only one function can be transferred to the additional switch (1). Therefore only one of the screws (4) may be in the vertical position.
Before transferring a new function, all screws must be turned back to their horizontal basic position.

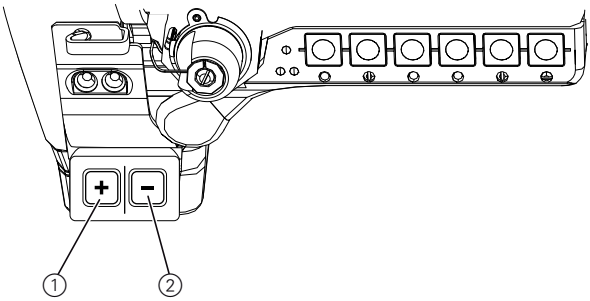
To transfer a key function:

1. Turn all screws to their basic position (2) so that the slots are horizontal.
2. Turn the screw under the desired key 90° so that the slot is vertical (3).

5.14 Switching the binder

On machines with a binder the **+** and **–** above the needle bar defined the path followed by the binder.

Figure 38: Switching the binder



(1) - Plus key *(2) - Minus key*

- **No key pressed:**
  ↳The binder follows the same path as the transporter.
- **Plus key pressed:** Bind an outer bow
  ↳The binder follows a longer path.
- **Minus key pressed:** Bind an inner bow
  ↳The binder follows a shorter path.

When the machine is switched on the binder always follows the same path as the transporter - regardless of which key was pressed before the machine was switched off.

Increasing or reducing the binder path:

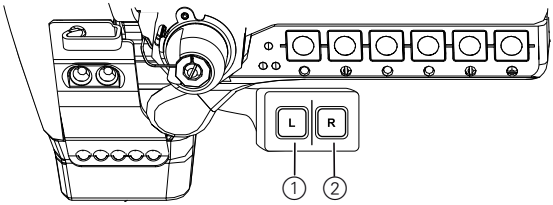
1. Press the plus or minus key.
   ↳The pressed key lights up.
   The binder follows a larger or smaller path than the transporter.
2. Press the currently illuminated key again.
   ↳The key does not light up any more.
   The binder follows the same path as the transporter.

You cannot directly switch between plus and minus. Deactivate the respectively illuminated key as described in operating step 2 before switching the other key.

5.15 Switching switchable needle bars

On machines with switchable needle bars the needle bars can be individually switched on and off via the ***L*** and ***R*** keys.

Figure 39: Switching switchable needle bars



(1) - L - Key for the left needle bar
(2) - R - Key for the right needle bar

Switching off a needle bar:

1. Press the key for the desired needle bar.

   ↳The key lights up. The needle bar is switched off.

Switching on a needle bar:

1. Press the illuminated key.

   ↳The key does not light up any more.
   The needle bar is switched on.

You **cannot** switch off both needle bars at the same time. When a needle bar is switched off and you press the key for the other needle bar, this switches on the disabled needle bar so that both needle bars are in use.

5.16 Operating the controller

Depending on the submodel, the machine is operated with an Efka or a DAC controller (📖 Section *7.7 Controller*, Page 82).

Operation of the controller is described in a controller-specific operating manual.

- **Efka DC1550/DA321G controller**
  The manufacturer's operating manual is provided in the accessory pack delivered with the controller.
- **DAC ECO and DAC CLASSIC controllers**:
  The operating manual is provided in the accessory pack delivered with the controller.
  The operating manual is also available in the download area at *www.duerkopp-adler.com*

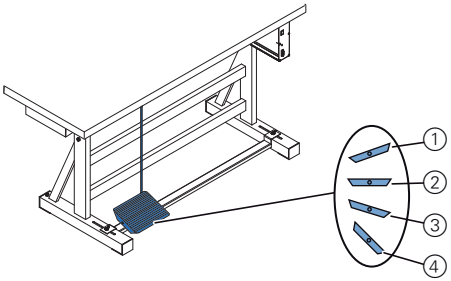
5.17 Sewing

WARNING

Risk of injury from the needle tip on unintentional start of sewing.
Take care not to accidentally press the foot pedal when your fingers are in the needle tip area.

The foot pedal starts and controls the sewing process.

Figure 40: Sewing with the foot pedal



(1) - Pedal position +1: sewing active
(2) - Pedal position 0: rest position
(3) - Pedal position -1: moves the sewing feet up
(4) - Pedal position -2: sewing the end strip and cutting off the thread

Initial position:

- Pedal position 0:
  ↳Machine stationary, needles up, sewing feet down.

To position the material to be sewn:

1. Press the foot pedal back half the way to the pedal position -1:
   ↳The sewing feet are lifted.
2. Push the material to be sewn into the initial position.

Sewing:

1. Press the foot pedal forwards to the pedal position +1:
   ↳The machine sews.
   The sewing speed increases the further forward the pedal is pressed.

To interrupt sewing:

1. Release the foot pedal in pedal position 0:
   ↳The machine stops, needles and sewing feet are down.

To continue sewing:

1. Press the foot pedal forwards to the pedal position +1:
   ↳The machine continues to sew.

To sew over thickened seams:

1. Activate the elevated sewing foot stroke using the knee lever (📖 Section 7.12 Sewing foot stroke).

To change the stitch length:

1. Switch on the 2nd stitch length using the key for the quick function (📖 Section 7.14 Switching on the quick functions at the keypad).

To increase the thread tension:

1. Switch on the additional tension using the key for the quick function (📖 Section 7.14 Switching on the quick functions at the keypad).

To sew intermediate strips:

1. Sewing backwards with the stitch adjustment lever (📖 Section 7.13 Stitch length)
   or with the quick function key
   (📖 Section 7.14 Switching on the quick functions at the keypad).

To finish a seam:

1. Press the foot pedal back completely to the pedal position -2:
   ↳The machine sews the end strip and the thread cutter cuts the thread.
   The machine stops, needles and sewing feet are up.
2. Remove the sewn material.

6 Maintenance

This section describes simple maintenance work that needs to be carried out on a regular basis. This maintenance work can be carried out by the operating personnel. Advanced maintenance work may only be carried out by qualified specialists. Advanced maintenance work is described in the 🕮 *Service manual*.

6.1 Cleaning work

6.1.1 Cleaning the machine

Sewing dust and thread remains must be removed every 8 operating hours using a compressed-air pistol or a brush. In the case of very fluffy material to be sewn, the machine must be cleaned more frequently.

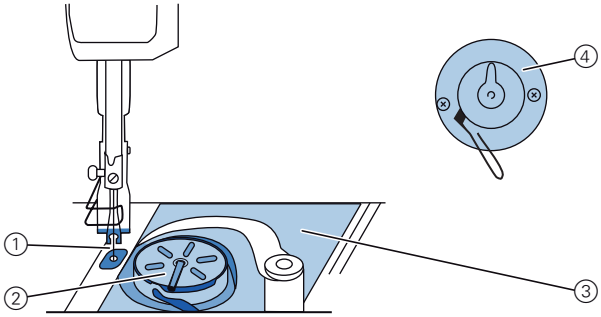
WARNING

Risk of injury due to flying particles.
Switch off the machine at the main power switch before starting any cleaning work.
Flying dirt particles can get in the eyes, causing injury.
Hold the compressed-air pistol in such a way that no particles fly near persons.
Take care that no particles fly into the oil pan.

ATTENTION

Malfunctions possible due to machine contamination.
Sewing dust and thread remains can impair the operation of the machine.
Clean the machine at regular intervals as described in the manual.

Figure 41: Points that need to be cleaned particularly thoroughly



(1) - Area around the needle
(2) - Hook
(3) - Area under the needle plate
(4) - Cutter on the bobbin winder

Areas particularly susceptible to soiling:

- Cutter on the bobbin winder for the hook thread (4)
- Area under the needle plate (3)
- Hook (2)
- Area around the needle (1)

Cleaning steps:

1. Switch off the power supply at the main switch.
2. Remove any sewing dust and thread remains using a compressed-air pistol or a brush.

ATTENTION

Possible damage to the paintwork from solvent-based cleaners.
Solvent-based cleaners damage the paintwork of the machine.
Use only solvent-free substances for cleaning the machine.

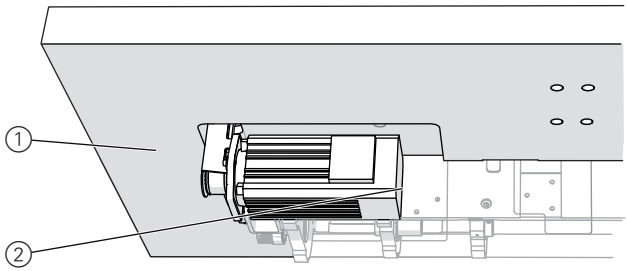
6.1.2 Cleaning the motor fan sieve

The motor fan sieve must be cleaned with a compressed air piston once a month. In the case of very fluffy material to be sewn, the motor fan sieve must be cleaned more frequently.

WARNING

Risk of injury due to flying particles.
Switch off the machine at the main power switch before cleaning the motor fan sieve.
Flying dirt particles can get in the eyes, causing injury.
Hold the compressed-air pistol in such a way that no particles fly near persons.
Take care that no particles fly into the oil pan.

Figure 42: Cleaning the motor fan sieve



(1) - Table plate *(2) - Motor fan sieve*

Cleaning steps:

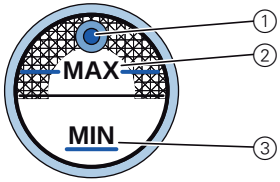
1. Switch off the power supply at the main switch.
2. Remove any sewing dust and thread remains using a compressed-air pistol or a brush.

6.2 Checking the oil level

WARNING

Skin injuries due to contact with oil.
Oil can cause a rash if it comes into contact with the skin.
Avoid any skin contact with the oil.
If oil gets on your skin, wash the affected skin areas thoroughly.

Figure 43: Oil level indicator



(1) - Refill opening
(2) - Maximum level marking
(3) - Minimum level marking

Checking the oil level

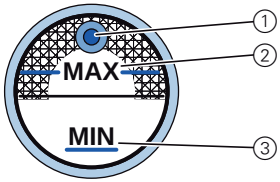
1. Check the oil level indicator every day:

Important: The oil level must always be between the minimum level marking (3) and the maximum level marking (2).

ATTENTION

Machine damage possible due to incorrect oil level.
Too little or too much oil can cause damage to the machine.
Check the oil level on a daily basis and top up oil so that the oil level is always between the minimum and maximum markings.

Figure 44: Oil level indicator



(1) - Refill opening
(2) - Maximum level marking
(3) - Minimum level marking

Topping up with oil

Pour in oil through the refill opening (1) as required:

1. Switch off the sewing machine at the main switch.
2. Pour in oil, up to but not past the maximum level marking (2).
3. Switch on the sewing machine at the main switch.

CLASSIC equipment

Note for machines with CLASSIC equipment:
If the oil level falls below the minimum level marking (3), on CLASSIC machines the oil level indicator lights up in red.

1. Switch the sewing machine off and on again after filling with oil.
   ↳The red light goes out.

Oil to be used:

Only DA 10 or an oil of equivalent quality may be used for the machine, which has the following properties:

- Viscosity at 40° C: 10 mm²/s
- Flash point: 150 °C

ATTENTION

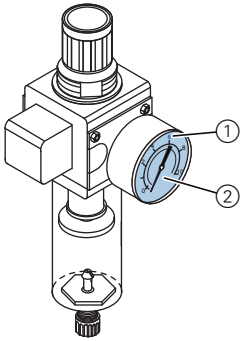
Machine damage possible due to incorrect oil.
An incorrect oil type can cause damage to the machine.
Only use oil that complies with the data in the operating manual.

ENVIRONMENTAL

Risk of environmental damage from oil.
Oil is a pollutant and must not enter the sewage system or the soil.
Carefully collect old oil and dispose of oil and oil-contaminated machine parts in the legally prescribed manner.

6.3 Checking the pneumatic system

Figure 45: Pressure indicator on the maintenance unit



(1) - Reference value: 6 bar
(2) - Pressure indicator

Check the pressure:

1. Check the pressure at the pressure indicator (2) each day.

   Reference value: 6 bar.

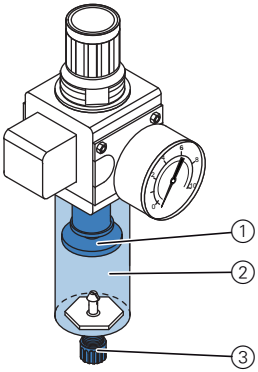
Important: The pressure must not deviate from the reference pressure by more than 1 bar.

ATTENTION

Machine damage possible due to incorrect pressure.
An incorrect pressure can cause damage to the machine.
Check the pressure on a daily basis.
Have the pressure adjusted by qualified specialists if the pressure deviates from the reference value.

Water condensation accumulates in the water separator of the maintenance unit.

Figure 46: Water level in the maintenance unit



(1) - Filter element
(2) - Water separator
(3) - Drain screw

Check the water level:

1. Check the water level every day.

Important: The condensation water must not rise up to the level of the filter element (1).

Drain water as required:

1. Switch off the sewing machine at the main switch.
2. Place the collection tray under the drain screw (3).
3. Remove the compressed air hose from the compressed air supply.
4. Unscrew the drain screw (3) completely.
5. Allow water to drain into the collection tray.
6. Re-tighten the drain screw (3).
7. Connect the compressed air hose to the compressed air supply.
8. Switch on the sewing machine at the main switch.

ATTENTION

Machine damage possible if there is too much water.
Too much water can cause damage to the machine.
Check the water level every day and drain the condensation water if there is too much water in the water separator.

6.4 Repairs

Contacts for repair in the event of damage to the machine:

Dürkopp Adler AG
Potsdamer Str. 190
33719 Bielefeld
Ph. +49 (0) 180 5 383 756
Fax +49 (0) 521 925 2594
Email: service@duerkopp-adler.com
Internet: www.duerkopp-adler.com

7 Set-up instructions

WARNING

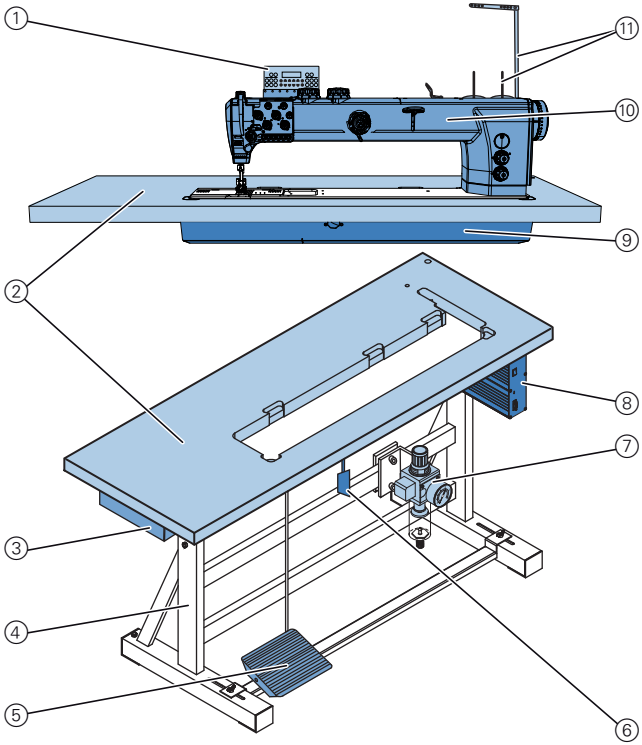
Risk of injury.
The machine may only be set up by trained specialists.
Wear safety gloves and safety shoes when unpacking and setting up.

7.1 Checking the scope of delivery

Important: The scope of delivery depends on your specific order.

1. Prior to set-up, check that all parts are present.

Figure 47: Scope of delivery (Long arm machine example)



(1) - Control panel
(2) - Table plate
(3) - Drawer
(4) - Frame
(5) - Pedal
(6) - Knee lever/switch
(7) - Maintenance unit
(8) - Control
(9) - Oil pan
(10) - Machine upper section
(11) - Thread reel holder

Standard equipment:

- Machine upper section (10)
- Oil pan (9)
- Thread reel holder with unwinding bracket (11)
- Controller (8)
- Keypad for the controller (1)

Optional additional equipment:

- Table plate (2)
- Drawer (3)
- Frame (4)
- Pedal (5)
- Knee lever/switch (6)
- Maintenance unit (7)
- Sewing light (not illustrated)

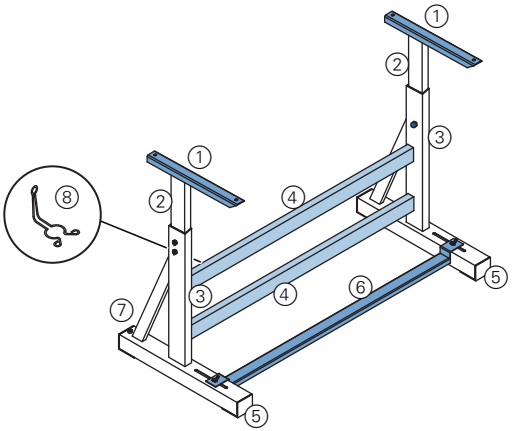
7.2 Removing the transport securing devices

All transport securing devices must be removed prior to set-up.

1. Remove the lashing straps and wooden blocks from the machine upper section, the table and the frame.
2. Remove the supporting wedges between the machine arm and needle plate.

7.3 Fitting the frame components

Figure 48: Fitting the frame components



(1) - Head sections of the inner bars
(2) - Inner bars
(3) - Frame bars
*(4) - Cross bar(s)**
(5) - Frame foot struts
(6) - Cross strut
(7) - Adjusting screw
(8) - Oil can holder

1. Screw the cross bar(s)* (4) onto the frame bars (3).
2. Screw the oil can holder (8) at the rear to the upper cross bar (4).
3. Screw the cross strut (6) onto the foot struts (5).
4. Insert the inner bars (2) in such a way that the longer end of the head section (1) is above the longer end of the foot struts (5).
5. Screw the inner bars (2) tight in such a way that both head sections (1) have the same height.
6. **Important:** Turn the adjusting screw (7) so that the frame has even contact with the ground.

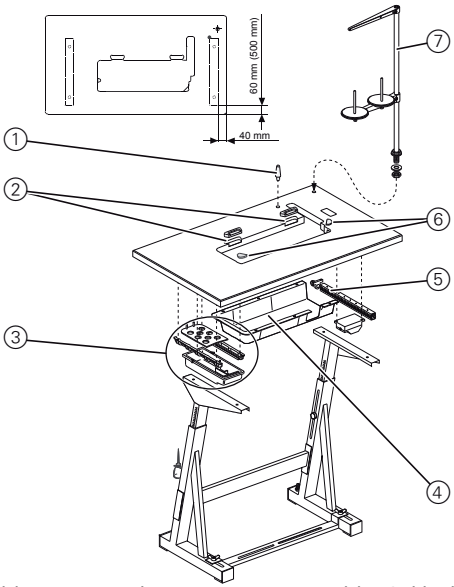
* Frame components for long arm machines have 2 cross bars and the other frame components have 1 cross bar.

7.4 Completing the table plate

The table plate belongs to the optional delivery scope. Drawings are provided in 🕮 *Appendix* to allow you to independently assemble a table plate.

7.4.1 Completing a short arm table plate

Figure 49: Completing a short arm table plate

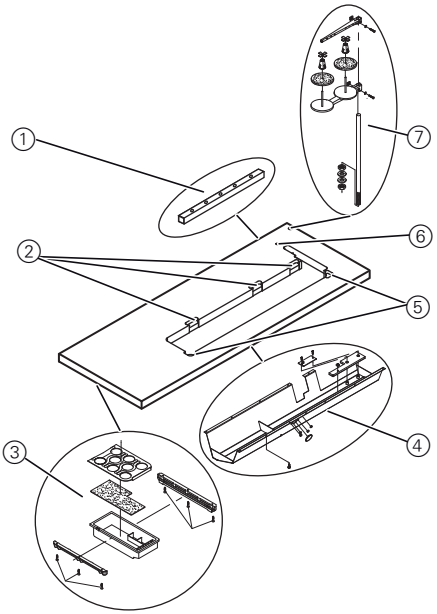


(1) - Upper section support
(2) - Recess for hinge lower parts
(3) - Drawer
(4) - Oil pan
(5) - Cable duct
(6) - Corner projections
(7) - Thread reel holder

1. Screw the drawer (3) with the left-hand bracket to the underside of the table plate.
2. Screw the oil pan (4) in place under the recess for the machine.
3. Screw the cable duct (5) to the underside of the table plate.
4. Insert the thread reel holder (7) in the hole.
5. Fasten the thread reel holder (7) with nut and washer.
6. Screw the thread real holder and the unwinding bracket onto the thread reel holder (7) in such a way that they are exactly opposite each other.
7. Insert the upper section support (1) in the hole.
8. Fit the lower part of the hinge into the recess (2) and screw tight.
9. Fit the rubber corners in the corner protrusions (6).

7.4.2 Completing a long arm table plate

Figure 50: Completing a long arm table plate

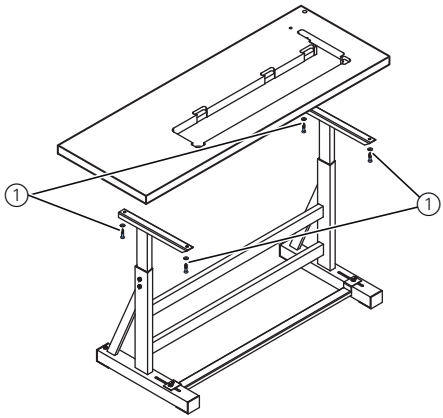


(1) - Cable duct
(2) - Cutout for hinge lower parts
(3) - Drawer
(4) - Oil pan
(5) - Corner protrusions
(6) - Hole
(7) - Thread reel holder

1. Screw the drawer (3) with the left-hand bracket to the underside of the table plate.
2. Screw the oil pan (4) in place under the recess for the machine.
3. Screw the cable duct (1) to the underside of the table plate.
4. Insert the thread reel holder (7) in the hole.
5. Fasten the thread reel holder (7) with nut and washer.
6. Screw the thread real holder and the unwinding bracket onto the thread reel holder (7) in such a way that they are exactly opposite each other.
7. Insert the plug (6) in the hole.
8. Fit the lower part of the hinge into the recess (2).
9. Fit the rubber corners in the corner protrusions (5).

7.5 Fastening the table plate to the frame

Figure 51: Fastening the table plate to the frame



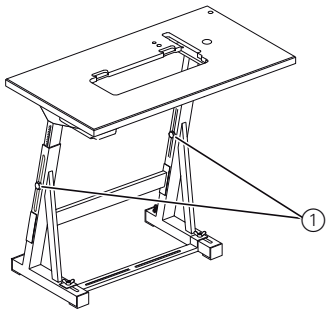
(1) - Screw holes and screws

1. Place the table plate on the head sections of the inner bars.
2. Screw the table plate firmly in place at the screw holes (1).

7.6 Setting the working height

The working height is continuously adjustable between 750 and 900 mm (clearance between the floor and upper edge of the table plate).

Figure 52: Setting the working height



(1) - Screws

WARNING

Risk of crushing.
The table plate can sink under its own weight when the screws on the frame bars are released. This applies even more when the machine upper section is already fitted.
Ensure that your hands are not jammed when releasing the screws.

1. Release the screws (1) on the frame bars.
2. Set the table plate to the desired height.

   Important: Pull out or push in the table plate evenly at both sides to prevent it from jamming.
3. Tighten the screws (1) on the frame bars.

7.7 Controller

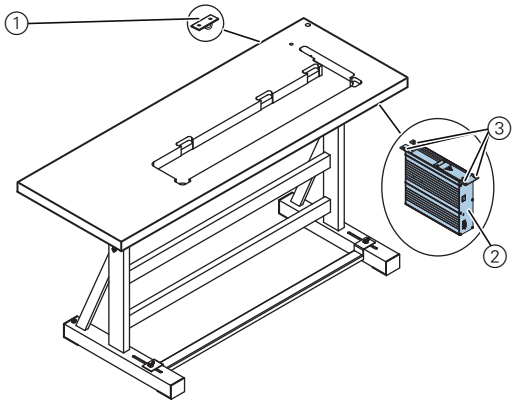
Depending on the submodel, the following controllers are available:

Machine type	Submodel: 867-	Controller
Short arm	19020 19040 39240	**DAC ECO** **or** **DAC CLASSIC**
Long arm	190020-70 190040-70 290020-70 290040-70	
Machines with integrated motor	190142-M 190322-M 190342-M	**DAC CLASSIC**
Short arm	392342 393342 394342 190122 190142 160122 260122 190145 190125 190146 190322 190342 190445 190425 29020 29040 290122 290142 290322 290342 490322 290445	**Efka DC1550/DA321G**
Long arm	190122-70 190322-70 190342-70 290122-70 290322-70 290342-70 290342-100	

7.7.1 Fitting the control

The DAC controllers and Efka controllers are installed according to the same principle.

Figure 53: Fitting the control

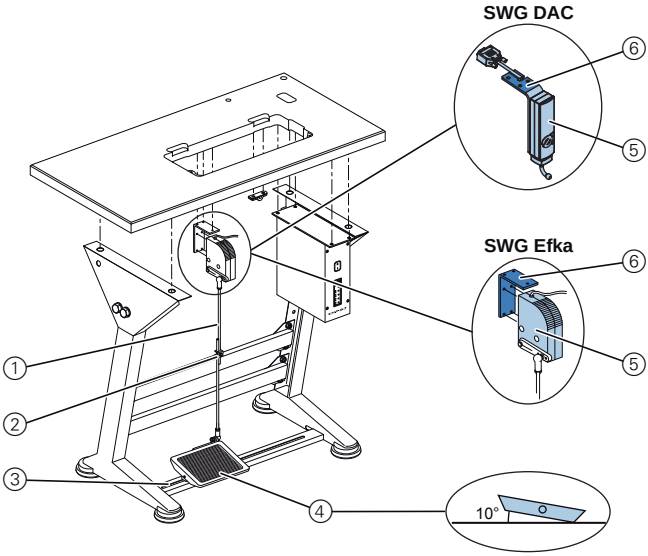


(1) - Strain relief
(2) - Control
(3) - Screw holder

1. Screw the control (2) onto the 4 screw holders (3) under the table plate.
2. Clamp the power cable of the control (2) into the strain relief mechanism (1).
3. Screw the strain relief (1) under the table plate.

7.7.2 Fit the pedal and setpoint device

Figure 54: Fitting the setpoint device



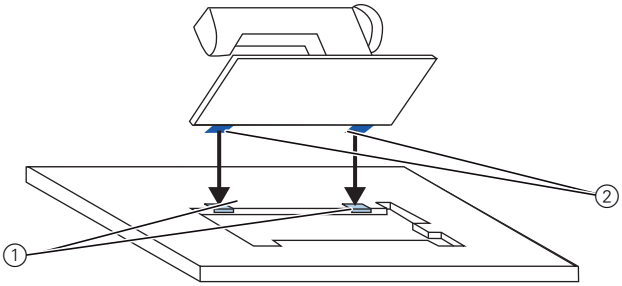
(1) - Pedal rod
(2) - Screw
(3) - Cross strut
(4) - Pedal
(5) - Setpoint device
(6) - Angle

1. Fit the pedal (4) on the cross strut (3) and align it in such a way that the middle of the pedal is under the needle. The cross strut has elongated holes to allow alignment of the pedal.
2. Screw the pedal (4) firmly onto the cross strut (3).
3. Screw the angle piece (6) under the table plate so that the pedal rod (1) runs to the pedal (4) at right-angles to the setpoint device (5).
4. Screw the setpoint device (6) onto the angle piece (5).
5. Hang the pedal rod (1) with the ball socket on the setpoint device (5) and the pedal (4).
6. Pull the pedal rod (1) to the correct length:

   Correct setting: 10° inclination with pedal (4) released
7. Tighten the screw (2).

7.8 Inserting the machine upper section

Figure 55: Inserting the machine upper section



(1) - Rubber inlays *(2) - Hinge upper parts*

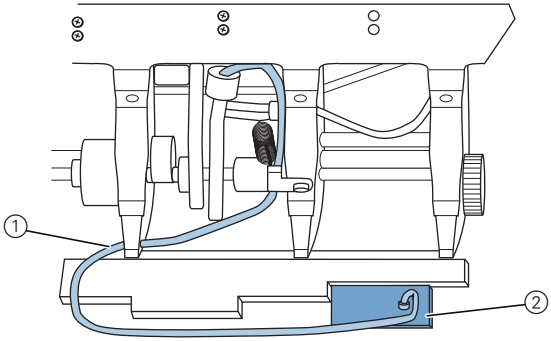
WARNING

Risk of crushing.
The machine upper section is heavy.
Take care not to jam your hands when fitting the machine upper section.
This especially applies when fitting the hinge upper parts into the rubber inlays.

1. Screw the upper hinge parts (2) onto the machine upper section.
2. Fit the machine upper section from above at an angle of 45°.
3. Insert the upper hinge parts (2) into the rubber inlays (1).
4. Fold the machine upper section down and insert it in the recess.

7.9 Fitting the oil extraction line

Figure 56: Fitting the oil extraction line



(1) - Tube of the oil extraction line *(2) - Filter*

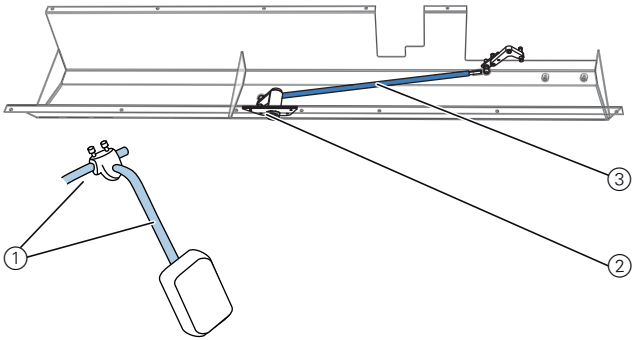
1. Fold the machine upper section back.
2. Screw the filter (2) into the oil pan with the plastic adapter to the right.
3. Insert the tube of the oil extraction line (1) into the plastic adapter.

7.10 Fitting the knee lever

The machine has either a mechanical or electrical knee lever, depending on the submodel and equipment.

7.10.1 Fitting the mechanical knee lever

Figure 57: Fitting the mechanical knee lever



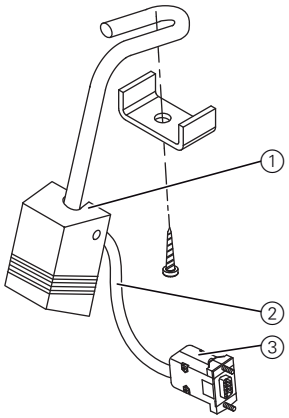
(1) - Knee lever rod

(2) - Hole in the oil pan
(3) - Transmission rod

1. Fold the machine upper section back.
2. Fit the transmission rod (3) in the oil pan.
3. Screw the knee lever (1) rods together.
4. Guide the rod (1) through the hole in the oil pan (2) and connect it to the transmission rod (3).

7.10.2 Fitting the electric knee lever

Figure 58: Fitting the electric knee lever



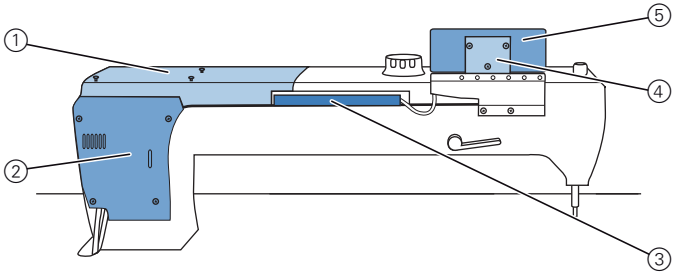
(1) - Knee switch

(2) - Connecting cable
(3) - Plug

1. Screw the knee lever (1) in front of the oil pan firmly in place under the table plate.
2. Guide the connecting cable (2) to the back between the oil pan and the control.
3. Insert the plug (3) of the connecting cable in the socket of the control.

7.11 Fitting the control panel

Figure 59: Fitting the control panel – Part 1



(1) - Upper machine cover
(2) - Valve cover
(3) - Cable duct (long arm only)
(4) - Control panel bracket
(5) - Control panel

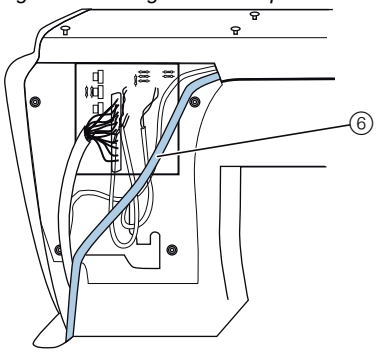
1. Unscrew the valve cover (2) and upper machine cover (1).
2. Screw the control panel (5) firmly onto the control panel bracket (4).

Long arm machines

Additional step for long arm machines:

3. Install the connecting cable through the cable duct (3).

Figure 60: Fitting the control panel – Part 2



(6) - Connecting cable

4. Install the connecting cable (6) in the machine arm.
5. Guide the cable through the hole in the table plate.
6. Insert the plug of the connecting cable in the socket of the control.
7. Screw on the valve cover (2) and upper machine cover (1).

7.12 Electrical connection

DANGER

Danger to life due to electric shock.
The machine may only be connected by trained electrical specialists.
Disconnect the power plug before carrying out work on the electrical equipment.
Make sure the power plug cannot be unintentionally reinserted.
The voltage on the type plate of the sewing drive must correspond to the mains voltage.

7.12.1 Checking the mains voltage

Important: The voltage on the type plate of the sewing drive must correspond to the mains voltage.

1. Check the mains voltage before connecting the machine.

7.12.2 Fitting and connecting the sewing lamp and sewing lamp transformer

The sewing lamp is an additional component that is not part of the standard delivery package.

DANGER

Danger to life due to electric shock.
The supply voltage for the sewing lamp remains switched on when the sewing machine is switched off
at the main power switch.
Pull out the power plug before fitting and connecting the sewing lamp and sewing lamp transformer

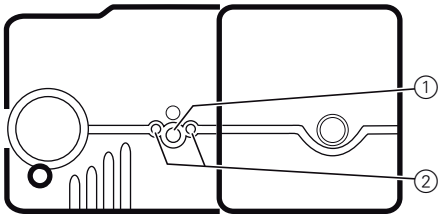
Make sure the power plug cannot be unintentionally reinserted.

Fitting the sewing lamp

1. Unscrew the valve cover and upper machine cover (Section *7.11 Fitting the control panel*, Page 89).

The upper machine cover has pre-drilled holes for attaching the sewing lamp.

Figure 61: Fitting the sewing lamp

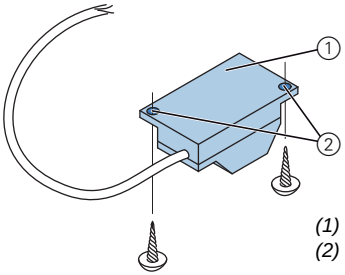


(1) - Large hole *(2) - 2 small holes*

2. Either drill through the hole for 1 large hole (1) or through the holes for 2 small holes (2).
3. Screw the sewing lamp holder through the hole on the arm cover.
4. Fit the sewing lamp on the bracket.
5. Lay the connecting cable in the machine arm and feed the cable through the hole in the table plate (Section *7.11 Fitting the control panel*, Page 89).
6. Stick the sticker with safety instructions onto the front of the control.

Fitting the sewing lamp transformer

Figure 62: Fitting the sewing lamp transformer

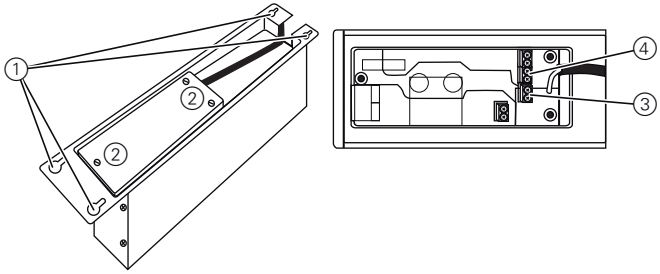


(1) - Sewing lamp transformer
(2) - Pre-drilled holes

1. Screw the sewing lamp transformer (1) in place at the pre-drilled holes (2) under the table plate.
2. Fasten the connecting cable under the table plate using cable ties.
3. Establish the plug connection to the supply line for the sewing lamp.

Connecting the sewing lamp transformer to the DAC controller

Figure 63: Connecting the sewing lamp transformer to the DAC controller

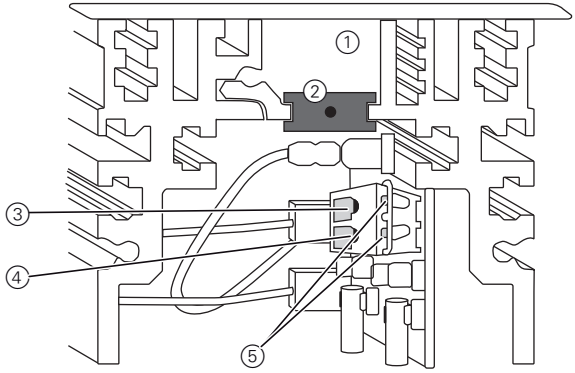


(1) - Screw holder
(2) - Adaptor cover screws
(3) - 24V/X5 port
(4) - X3 port

1. Loosen the screw holder (4) for the control until the control can be removed.
2. Remove the control.
3. Loosen the adaptor cover screws (3).
4. Connect the supply line:
   - For sewing lamps to be additionally fitted to the X3 connection (1)
   - For integrated LED sewing lamps on the 24V/X5 connection (2)

Connecting the sewing lamp transformer to the Efka controller

Figure 64: Connecting the sewing lamp transformer to the Efka controller



(1) - Cable duct
(2) - Rubber guide
(3) - Upper clamp
(4) - Lower clamp
(5) - Clamp opening

1. Remove all 4 screws from the controller front panel.
2. Remove the front panel.
3. Feed the cable from the rear through the cable duct (1) into the controller.
4. Remove the black rubber guide (2).
5. Pierce the round opening of the rubber guide with a screwdriver.
6. Feed the sewing lamp transformer cable through the resulting hole in the rubber guide.
7. Replace the black rubber guide (2).
8. Press a narrow screwdriver into the terminal openings (5) to open terminals (3) and (4).

   Important: Do not press so hard that the board is pressed in.
9. Connect the blue cable to the upper terminal (3) and the brown cable to the lower terminal (4).
10. Fasten the front panel with the 4 screws.

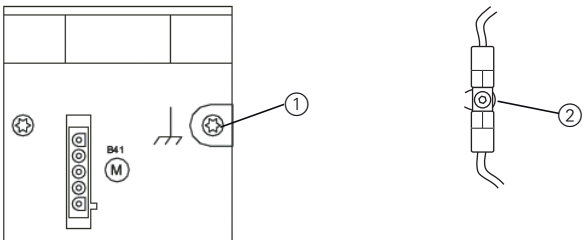
7.12.3 Establishing equipotential bonding

DANGER

Danger to life due to electric shock.
Disconnect the power plug before establishing equipotential bonding.
Make sure the power plug cannot be unintentionally reinserted.

The earthing cable conducts away any static charging of the machine upper section.

Figure 65: Establishing equipotential bonding



(1) - Connection at the controller *(2) - Tab connector*

1. Tilt the machine upper section.
2. Feed the earthing cable from the connection (1) on the rear side of the controller through the cutout in the table plate and plug it onto the tab connector (2) on the base plate.

7.12.4 Connecting the controller

DANGER

Danger to life due to electric shock.
Disconnect the power plug before connecting the controller.
Make sure the power plug cannot be unintentionally reinserted.

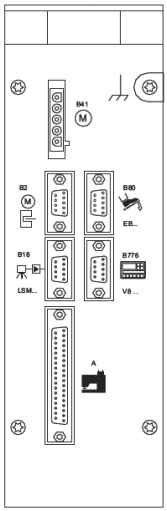
Connecting the controller consists of the following work:

- Insert the plugs of all connecting cables in the sockets on the back of the control.
- Connect the control to the power supply using the power cable.

Read the 🕮 *Operating manual* for the respective controller:

- **Efka DC1550/DA321G controller:**
  The operating manual is provided in the controller accessory pack.
- **DAC ECO and DAC CLASSIC controllers:**
  The operating manual is provided in the controller accessory pack. The operating manual is also available in the download area at *www.duerkopp-adler.com*.

Figure 66: DAC CLASSIC connection sockets



7.12.5 Connecting the sewing machine upper section

3. Insert the plug on the connecting cable for the sewing machine upper section into the socket of the respective controller. The connection diagram is provided in the 🕮 *Operating manual* for the respective controller:
   - **Efka DC1550/DA321G controller:**
     The operating manual is provided in the controller accessory pack.
   - **DAC ECO and DAC CLASSIC controllers:**
     The operating manual is provided in the controller accessory pack.
     The operating manual is also available in the download area at *www.duerkopp-adler.com*.

7.12.6 Fitting and connecting the Hall sensor

DANGER

Danger to life due to electric shock.
Disconnect the power plug before connecting the Hall sensor.
Make sure the power plug cannot be unintentionally reinserted.

The Hall sensor is required for machines with a transmission ratio of 1:1.55 between the motor and machine.

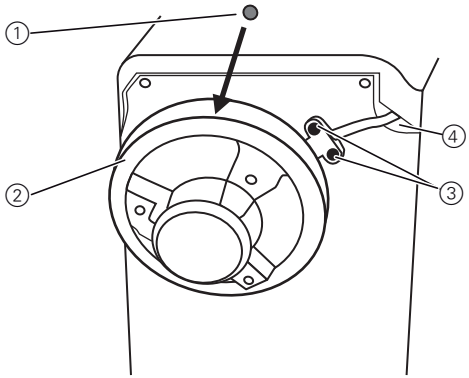
The transmission ratio of 1:1.55 provides approx. 30% more torque and stitching force compared to the normal transmission ratio of 1:1.

Important: For this reason, when using the Hall sensor it is important to ensure that the maximum speed for the respective submodel is not exceeded.

Fitting the Hall sensor

1. Remove the handwheel and handwheel cover.
2. Remove the valve cover.

Figure 67: Fitting the Hall sensor



(1) - Magnet
(2) - Belt pulley
(3) - Pre-drilled holes
(4) - Cable opening

3. Fit the Hall sensor to the pre-drilled holes (3).
4. Feed the Hall sensor cable through the cable opening (4) down to the controller
5. Check if a magnet is already fitted to the pulley wheel (2).
   If a magnet is not already fitted:
   Fit the magnet (1) provided in the Hall sensor accessory pack.
6. Insert the Hall sensor plug into socket B18 of the respective controller. The connection diagram is provided in the 🕮 *Operating manual* for the respective controller:
   - **Efka DC1550/DA321G controller:**
     The operating manual is provided in the controller accessory pack.
   - **DAC ECO and DAC CLASSIC controllers:**
     The operating manual is provided in the controller accessory pack.
     The operating manual is also available in the download area at *www.duerkopp-adler.com*.

Efka controller

Additional step for Efka controllers:

7. Check and set the following parameters:
   - **F-290** as per 🕮 *Parameter sheet 9800 331104 PBXX*
   - **F-111** set to 3,000 RPM or less
   - **F-270** set to 6 (position sensor selection)
   - **F-272** to be calculated according to the following formula:

     $$\frac{\textit{Motor belt pulley diameter (teeth)}}{\textit{Machine belt pulley diameter (teeth)}} \textit{ x 1000}$$

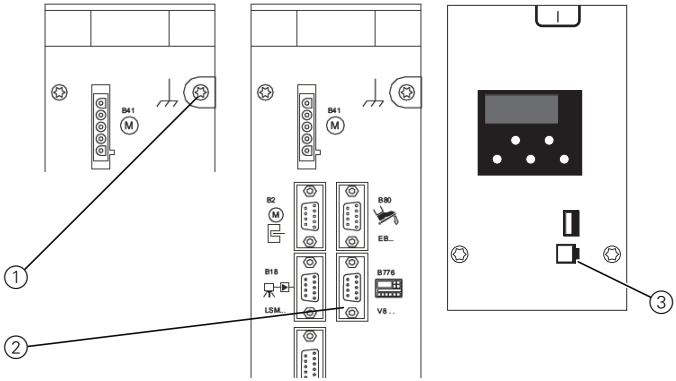
With DAC controllers the parameters are automatically set via transfer of the machine ID.

8. Fit the valve cover and screw tight.
9. Check the setting of the Hall sensor:

   Correct setting
   The magnet is located directly above the Hall sensor when the needle tip reaches the throat plate.
   If this is not the case then the handwheel must be readjusted.
   For more information see 🕮 *Service manual*.
10. Fit the handwheel cover and handwheel and screw tight.

7.12.7 Connecting the electrical knee switch

Figure 68: Connecting the knee switch



(1) - Earth connection on the rear side of the controller
(2) - DAC controller connection socket: Rear side
(3) - Efka controller connection socket: Front side

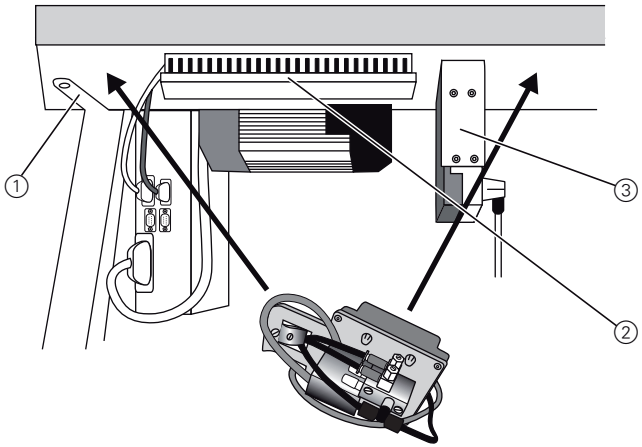
1. Connect the knee switch earthing cable to the rear side of the controller (1).
2. Insert the plug of the knee switch in the socket of the respective controller:
   - **DAC ECO and DAC CLASSIC controllers:**
     Socket (2) on the rear side of the controller
   - **Efka DC1550/DA321G controller:**
     Socket KN19 (3) on the front side of the controller

7.12.8 Fitting the M-Control circuit board

DANGER

Danger to life due to electric shock.
Disconnect the power plug before fitting the circuit board.
Make sure the power plug cannot be unintentionally reinserted.

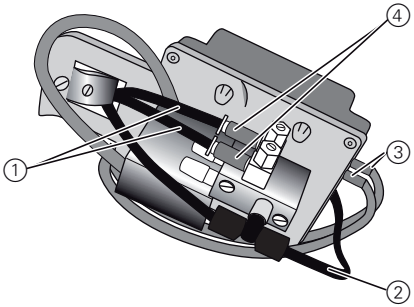
Figure 69: Fitting the circuit board



(1) - Frame
(2) - Cable duct
(3) - Setpoint device angle bracket

1. Fitting the circuit board:
   - Machines with a binder:
     between the frame (1) and cable duct (2)
   - Machines with switchable needle bars:
     At the right next to the setpoint device angle bracket (3)

Figure 70: Connecting the circuit board



(1) - Upper section compressed air hoses
(2) - Compressed air supply hose
(3) - Connection sockets

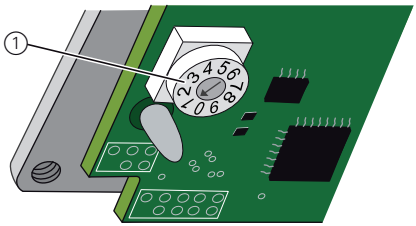
2. Connect the compressed air supply hose (2) to the maintenance unit.
3. Fasten the upper section compressed air hoses (1) to the throttle valves (4).

Important: If the function of the ***R*** and ***L*** keys are swapped over on machines with switchable needle bars then the upper section compressed air hoses (1) are swapped on the throttle valves (4).

4. Plug the electrical cable connectors into the connecting sockets (3).

Switch position on the circuit board

Figure 71: Setting the circuit board switch



(1) - Switch

The position of the switch (1) depends on the submodel:

- Machines with a binder: Position 1
- Machines with switchable needle bars: Position 2
- Machines with a clean seam start:
  📖 *Additional manual 0791 867708*

7.12.9 Setting machine-specific parameters

With DAC controllers the parameters are automatically set via transfer of the machine ID.

With Efka controllers the parameter F-290 must be set for each submodel according to the specifications in 🕮 *Parameter sheet*. The parameter sheet is provided in the controller accessory pack.

1. Set parameter **F-290** according to the specifications in 🕮 *Parameter sheet.*

For submodel 867-290342-100 only:

2. Set parameter **F-111** to 2500 min^{-1} or less.

7.13 Pneumatic connection

7.13.1 Fitting the maintenance unit

The pneumatic connection package is available under order number 0797 003031. It consists of:

- System connection hose
  (length 5 m, diameter 9 mm)
- Hose connectors and hose clamps
- Coupling socket and coupling plug

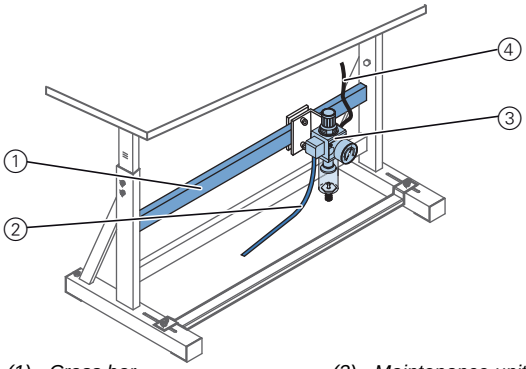
Correct setting

The system pressure for the pneumatic unit is 8 – 10 bar.

ATTENTION

Machine damage possible due to incorrect pressure.
An incorrect pressure can cause damage to the machine.
Make sure that the system pressure is set to 8 – 10 bar before fitting the pneumatic unit.

Figure 72: Fitting the pneumatic maintenance unit



(1) - Cross bar
(2) - System connection tube
(3) - Maintenance unit
(4) - Machine tube

1. Attach the maintenance unit (3) to the upper cross bar (1) of the frame using the bracket, screws and clip.
2. Connect the machine tube (4) coming out of the upper section to the maintenance unit (3) at the top right.
3. Connect the system connection tube (2) to the pneumatic system.

7.13.2 Setting the operating pressure

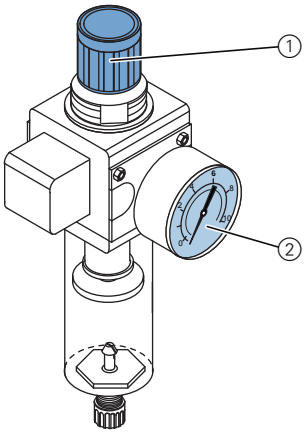
Correct setting

The operating pressure for the pneumatic unit is 6 bar.

ATTENTION

Machine damage possible due to incorrect pressure.
An incorrect pressure can cause damage to the machine.
Make sure that the operating pressure is set correctly before putting the machine into operation.

Figure 73: Setting the operating pressure



(1) - Turning handle
(2) - Pressure indicator

1. Pull the turning handle (1) up.
2. Set the operating pressure in such a way that the pressure indicator (2) indicates 6 bar:
   - **To increase the pressure:** Turn the rotary handle (1) clockwise.
   - **To reduce the pressure:** Turn the rotary handle (1) counterclockwise.
3. Push the turning handle (1) down.

7.13.3 Pneumatic foot lifting

Installation information is provided in 🕮 *Additional manual 0791 867704*.

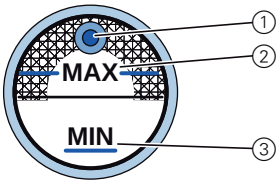
7.14 Lubrication

WARNING

Skin injuries due to contact with oil.
Oil can cause a rash if it comes into contact with the skin.
Avoid any skin contact with the oil.
If oil gets on your skin, wash the affected skin areas thoroughly.

All wicks and felt bits of the upper section are soaked in oil on delivery. This oil is conveyed to the reservoir during use. which is why you should avoid filling too much oil during initial filling.

Figure 74: Oil level indicator



(1) - Refill opening
(2) - Maximum level marking
(3) - Minimum level marking

1. Pour oil through the refill opening (1) up to no more than 2 mm below the maximum level marking (2).

ATTENTION

Machine damage possible due to incorrect oil level.
Too little or too much oil can cause damage to the machine.
On the first filling, only add oil up a level 2 mm below the maximum level mark.

Oil to be used:

Only DA 10 or an oil of equivalent quality may be used for the machine, which has the following properties:

- Viscosity at 40° C: 10 mm²/s
- Flash point: 150 °C

ATTENTION

Machine damage possible due to incorrect oil.
An incorrect oil type can cause damage to the machine.
Only use oil that complies with the data in the operating manual.

ENVIRONMENTAL

Risk of environmental damage from oil.
Oil is a pollutant and must not enter the sewage system or the soil.
Carefully collect old oil and dispose of oil and oil-contaminated machine parts in the legally prescribed manner.

7.15 Sewing text

Carry out a sewing test before starting up the machine. Adjust the machine to the requirements of the material to be sewn.

To do this, read the corresponding sections of the 🕮 *Operating manual*. Read the corresponding section of the 🕮 *Service manual* in order to make adjustments to the machine if the sewing results do not conform the to the requirements.

WARNING

Risk of injury by the needle point and moving parts.
Switch off the sewing machine before replacing the needle, insert the thread, insert the hook thread reel, adjust the hook thread tension and the thread regulator.

Performing a sewing test

1. Insert the needle.
2. Wind on the hook thread.
3. Insert the hook thread reel.
4. Thread in the hook thread.
5. Thread in the needle thread.
6. Adjust the thread tension to the material to be sewn.
7. Adjust the thread regulator to the material to be sewn.
8. Adjust the sewing foot pressure to the material to be sewn.
9. Adjust the sewing foot stroke to the material to be sewn.
10. Adjust the stitch length.
11. Transfer the desired quick function from the keypad to the additional switch.
12. Start the sewing test at low speed.
13. Increase the sewing speed continuously until the working speed is reached.

8 Disposal

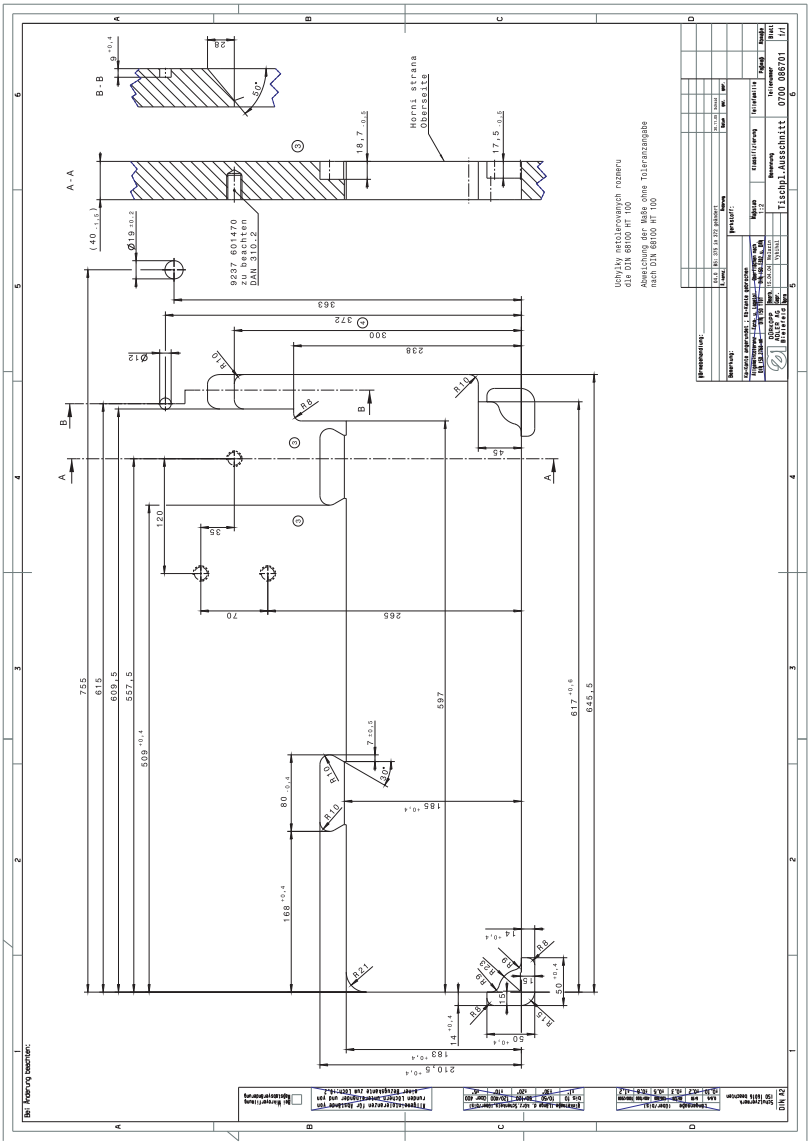
The customer is responsible for disposal of the machine and packaging materials.

The respectively applicable legal regulations must be observed for disposal.

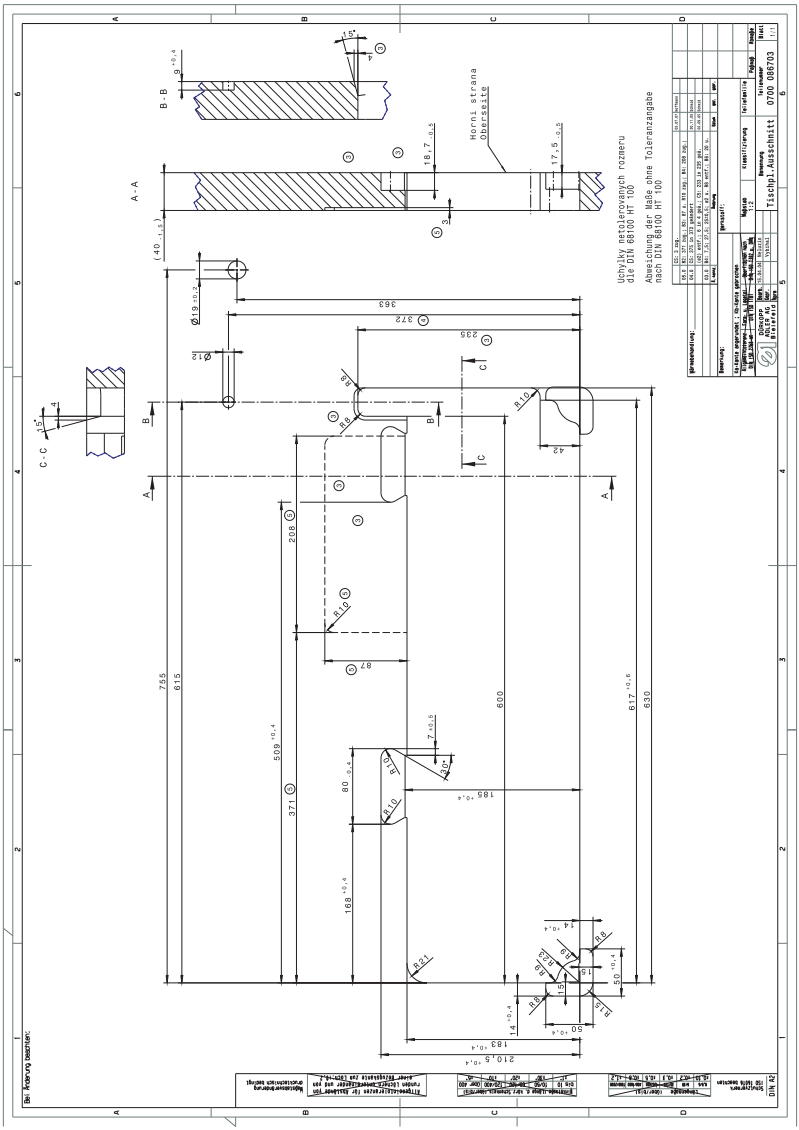
9 Appendix

9.1 Table plate drawings

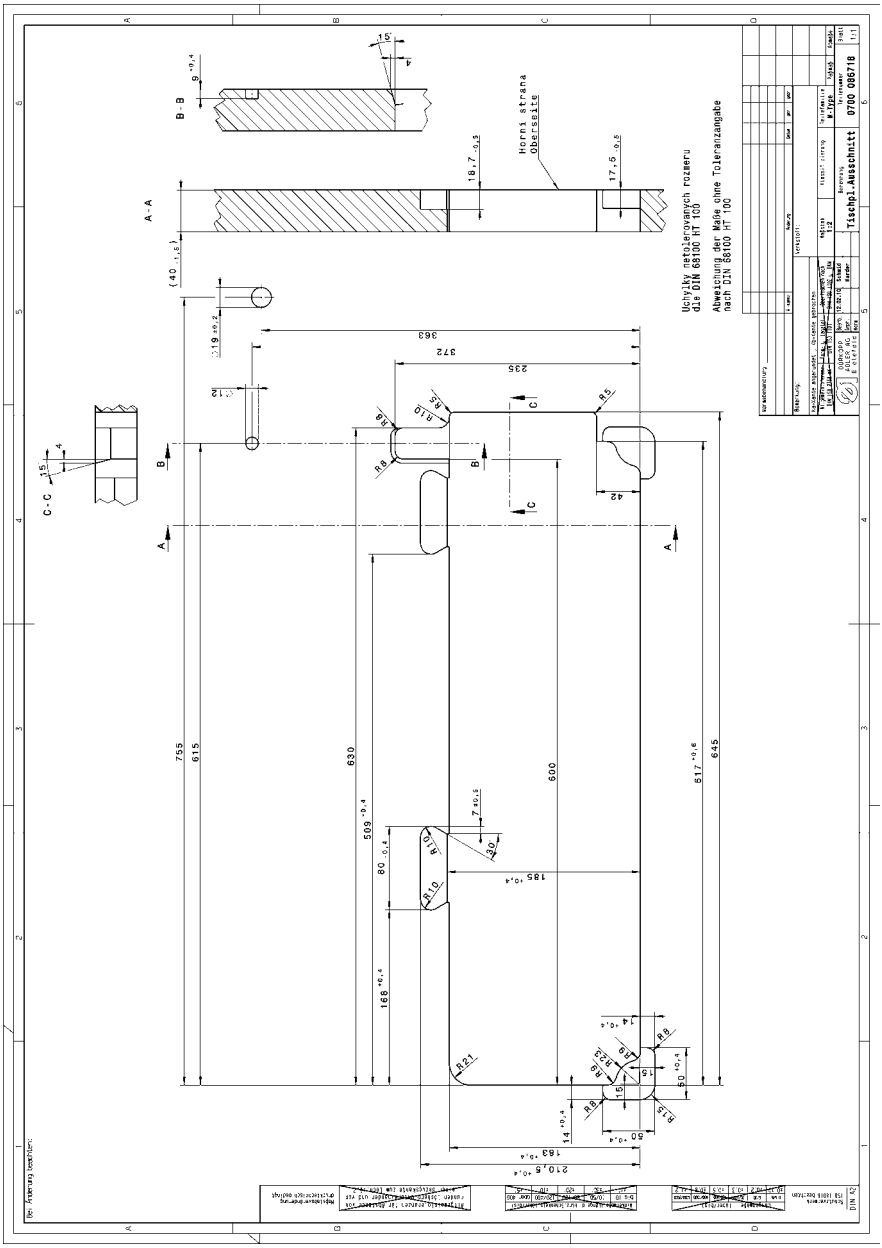
Dimensions for manufacturing a tabletop, part 1



Dimensions for manufacturing a tabletop, part 2



Dimensions for manufacturing a tabletop, part 2



9.2 Table of maximum speeds

Maximum speeds, part 1

867-		Standard short arm												
		160122	190020 ECO	190040 ECO	190122	190125	190142	190145	190146	190322	190342	190425	**190445**
Stitch length 0–6	Stroke 1–3	3400			3400	3400	3400	3400	3400	3400	3400	3400	3400
	Stroke 4	3100			3100	3100	3100	3100	3100	3100	3100	3100	3100
	Stroke 5	2500			2500	2500	2500	2500	2500	2500	2500	2500	2500
	Stroke 6-9	1800			1800	1800	1800	1800	1800	1800	1800	1800	1800
Stitch length 6–9	Stroke 1-4		3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
	Stroke 5		2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
	Stroke 6-9		1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Stitch length 9–12	Stroke 1-5		2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
	Stroke 6-9		1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800

867-		Standard short arm												
		260122	290020	290040 ECO	290122 ECO	290142	290322	290342	290445	392040 ECO	392342	393342	394342	490322
Stitch length 0–6	Stroke 1-4	3000												
	Stroke 5	2500												
	Stroke 6-9	1800												
Stitch length 6–9	Stroke 1-4	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
	Stroke 5	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
	Stroke 6-9	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Stitch length 9–12	Stroke 1-5	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
	Stroke 6-9	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800

Maximum speeds, part 2

867-		Integrated motor			Long arm				
		190142-M	190322-M	190342-M	190020-70 ECO	190040-70 ECO	190122-70	190322-70	190342-70
Stitch length 0–6	Stroke 1–3	3400	3400	3400			3000	3000	3000
	Stroke 4	3100	3100	3100			2800	2800	2800
	Stroke 5	2500	2500	2500			2000	2000	2000
	Stroke 6-9	1800	1800	1800			1800	1800	1800
Stitch length 6–9	Stroke 1-4	3000	3000	3000	3000	3000	3000	3000	3000
	Stroke 5	2500	2500	2500	2000	2000	2000	2000	2000
	Stroke 6-9	1800	1800	1800	1800	1800	1800	1800	1800
Stitch length 9–12	Stroke 1-5	2000	2000	2000	2000	2000	2000	2000	2000
	Stroke 6-9	1800	1800	1800	1800	1800	1800	1800	1800

867-		Long arm						
		290020-70 ECO	290040-70 ECO	290122-70	290322-70	290342-70	290342-100	
Stitch length 0–6	Stroke 1–3						2500	
	Stroke 4						2300	
	Stroke 5						2000	
	Stroke 6-9						1800	
Stitch length 6–9	Stroke 1-4	3000	3000	3000	3000	3000	2500	
	Stroke 5	2000	2000	2000	2000	2000	2000	
	Stroke 6-9	1800	1800	1800	1800	1800	1800	
Stitch length 9–12	Stroke 1-5	2000	2000	2000	2000	2000	2000	
	Stroke 6-9	1800	1800	1800	1800	1800	1800	

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